Testing The UI-DIF Formulas

This paper was presented at the 2002 IRS Research Conference.

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Executive Summary

SB/SE requested this study to test quickly the usefulness of the UI-DIF Formulas. Unreported Income (UI) formulas were developed by the Office Of Research to identify returns with unreported income, not already identified by computer matches. Study results were requested within several months without relying on new exams. Studies relying on new exams require several years to complete and evaluate.

Eleven experts in unreported income classified 400 returns in eight activity codes. In each activity code, the experts classified 50 returns, 25 returns from the top two percent UI Scores and 25 returns from the bottom 50 percent UI Scores. All information about the UI Scores was shielded from the classifiers.

Each classifier answered the question, "Should The Return Be Examined For Unreported Income?", 'Yes' or 'No'. Responses were tabulated for each activity code. Conditions necessary to validate the UI Scores were as follows:

- (1) A strong association between 'Yes' and high UI Scores, and
- (2) A strong association between 'No' and low UI Scores. Weak associations would fail to validate the UI Scores.

The frequency that classifiers recommended a return for audit defined an Audit Sum. Audit Sums (audit frequencies) validated the UI-DIF Formulas for each activity code. In each activity code, returns with high UI Scores were identified most often for audit, while returns with low UI Scores were identified least often for audit. Overall results were the sum of results for each activity code and follow for optimal Audit Sums:

Overall Results From Optimal Audit Sums

Unreported Income?

UI SCORES YES NO **TOTAL Top 2%** 12 200 188 Bottom 50% 40 160 200 **TOTAL** 400 228 172

Overall, 188 of the 200 returns with high UI Scores were identified for audit, and 160 of the 200 returns with low UI Scores were accepted as filed. The associations were very high. UI-DIF Formulas were validated in each activity code tested. In each activity code tested, high UI Scores may justify probes for unreported income that might otherwise be prohibited.

High UI Scores could be used to select returns for examination. Classification in the field, however, is different than classification in this study. In the field, only returns with high UI Scores are classified and classification is by one classifier only. Field simulations suggested that UI-DIF Formulas are highly recommended for Nonfarm Business Activity Codes 535 to 537, are marginally recommended for Farm Business Activity Codes 538 and 539, and are not recommended for Nonbusiness Activity Codes 532 to 534, at this time.

Table Of Contents

	Page
List of Tables	iv
List of Figures	iv
Acknowledgements	v
Background	1
Study Plan	2
Procedures For Collecting Data	2
Procedures For Treating Data	3
1. Classification By Experts	3
2. Classification By Majority Audit Sum	4
3. Classification By Optimal Audit Sum Cutoff	5
Observations	5
1. Average Responses	5
2. Classification by Majority Audit Sum	7
3. Classification By Optimal Audit Sum Cutoff	8
Conclusions	. 9
Recommendations	10
Appendices	
A. Sample Scorecard	
B. Average Responses By 11 Classifiers	
C. Majority Audit Sums	
D. Optimal Audit Sums	
E. Research Proposal For The UI Study	

Tables

Table	Page
1. Average Responses	6
2. Majority Audit Sum GE 6	. 7
3. Optimal Audit Sums	. 8
<u>Figures</u>	
Figure	Page
1. Activity Code 53X, Tabulation Of Classifier Responses	4

2. Activity Code 53X, Classification By Majority Audit Sums GE 6 4

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The classification process was proctored and controlled by both Christina Rivera, SB/SE Compliance Policy, and by Lou Ann Sandoval, SB/SE Research in Denver. They enforced the research guidelines and they maintained the integrity of the study.

Returns were sampled, three-year facsimiles were printed, and documentation was provided quickly and expertly by Randy Mastenbrook and by Bob Buchwald of the MACS (Midwest Automated Compliance System) Development Center.

The UI-DIF Formulas were developed by Fred Cox, Eli Intrator, and Lance Asner, at the Detroit Computing Center with the assistance of Rick Griffith.

Testing The UI-DIF Formulas

Lance Asner NHQ, RAS, Office Of Research May 1, 2002

Background

Unreported Income (UI) DIF Formulas¹ were developed by the Office of Research. The customer for UI-DIF Formulas is Centralized Workload Selection and Delivery, Compliance Policy, SB/SE.

UI-DIF Formulas were developed from the most recent TCMP Survey of Individuals², and were developed for Activity Codes³ 532 to 539. Activity Codes 530 and 531 were not included because they displayed too few sample returns with non-IRP unreported income, i.e. income not computer verified in the Information Returns Processing (IRP) program.

UI Formulas were developed using the DIF methodology, a proven technique for workload selection. Workload was defined as returns with non-IRP unreported income. Returns with high UI Scores are expected to yield unreported income much more often than returns with lower UI Scores.

High UI Scores may justify probes for unreported income that might otherwise be prohibited. Legislation enacted in RRA 98 stated, "The Secretary shall not use financial status or economic reality examination techniques to determine the existence of unreported income of any taxpayer unless the Secretary has a reasonable indication that there is a likelihood of such unreported income." High UI Scores may satisfy this requirement to provide 'a reasonable indication that there is a likelihood of such unreported income'.

Nonbusiness 530 – 1040A/EZ Type with TPI under \$25,000.

531-1040 Type with TPI under \$25,000 and TPI greater than TGR . 532-1040 Type with TPI \$25,000 under \$50,000 and TGR under \$25,000. 533-1040 Type with TPI \$50,000 under \$100,000 and TGR under \$25,000.

534 – 1040 Type with TPI \$100,000 and over, and TGR under \$100,000.

Nonfarm Business 535 – 1040 (C-TGR > F-TGR) with TGR under \$25,000 and TGR greater than TPI.

536 – 1040 (C-TGR > F-TGR) with TGR \$25,000 under \$100,000 and TPI under \$100,000.

537 - 1040 (C-TGR > F-TGR) with TGR \$100,000 and over.

Farm Business 538 – 1040 (C-TGR < F-TGR) with TGR under \$100,000 and TPI under \$100,000.

539-1040 (C-TGR < F-TGR) with TGR $\$100,\!000$ and over.

¹ The DIF methodology is a proprietary IRS enhancement of the statistical technique, DIscriminant Function (DIF). DIF involves the intensive preprocessing of continuous data into wide intervals and a pooled covariance matrix.

² The III-10 TCMP Survey involved Tax Year 1988 Individual returns filed in Processing Year 1989.

³ Individual returns are arranged by IRS among ten homogeneous, mutually exclusive exam classes. The ten exam classes define Activity Codes 530 to 539. Individual Activity Codes are defined in terms of Total Positive Income (TPI) on Forms 1040,1040A, and 1040EZ and in terms of Total Gross Receipts (TGR) on Schedules C and F. Abridged definitions follow for Activity Codes 530 to 539:

Study Plan

The Office of Research developed the study plan that met SB/SE requirements to test the usefulness of UI Scores in several months, without new examinations. New return examinations require several years to complete and evaluate.

Eleven experts in unreported income classified 400 Individual returns with very high and low UI Scores. All information about the UI Scores was shielded from the classifiers. For each return, each classifier answered the question, "Should The Return Be Examined For Unreported Income?", 'Yes' or 'No'. 'Yes' and 'No' responses were tabulated and associated with high and low UI Scores. Two conditions were necessary to validate the UI Scores: (1) A strong association between 'Yes' and high UI Scores, and (2) a strong association between 'No' and low UI Scores. Weak associations fail to validate the UI Scores.

The study tested all eight UI Formulas (Activity Codes 532 to 539). For each activity code, 50 returns were classified, 25 returns with high UI Scores and 25 returns with low UI Scores. The 25 returns with high UI Scores were randomly selected from among the two percent of returns with highest UI Scores. The 25 returns with low UI Scores were randomly selected from among the fifty percent of returns with lowest UI Scores. The experts classified returns with no knowledge that UI Scores were involved in this study.⁵

Eleven experts in unreported income classified 400 returns (50 returns per activity code, for eight activity codes). In Phase 1, facsimile returns were classified for Tax Year 2000 and for the two prior years.⁶ This paper is limited in scope to the Phase 1 results.

Phase 2 tested classification with facsimile returns, with case building tools, ⁷ and with original returns. Original returns may include line items not displayed on facsimile returns, as some line items were not transcribed during return processing. Phase 2 results are outside the scope of this paper.

Procedures For Collecting Data

The research proposal for the UI Study was prepared by the Office of Research. The proposal included instructions for selecting the 400 sample returns and guidelines for data collection. Appendix E contains the research proposal for the UI Study.

Data was collected by two experienced researchers; (1) a representative of SB/SE Compliance Policy in DC (Rep-DC), and (2) a representative of SB/SE Research in Denver (Rep-Denver). The Rep-DC and Rep-Denver preserved the integrity of the UI Study by enforcing the following guidelines:

⁴ The IRS Restructuring and Reform Act of 1998, Code Sec. 7602, "Examination Of Books And Witnesses", (e), "Limitation On Examination On Unreported Income."

⁵ One-sample runs tests verified the random mix of the 25 high and 25 low UI Scores in each activity code.

⁶ Facsimile returns for Tax Year 2000 and for the two prior years were printed by MACS (Midwest Automated Compliance System).

⁷ Case building tools provide classifiers with related return information from IDRS and with third party information from CBRS and Choice Point.

- 1. The Rep-DC and the Rep-Denver were the **only** persons to communicate with the eleven classifiers on items pertaining to the UI Study.
- Classifiers were instructed **NOT** to discuss the returns, the classification process, nor the study in general, with anyone other than the Rep-DC or the Rep-Denver. Communications about the study were public and were observed by all classifiers.
- 3. Each classifier was provided their own set of returns. Returns were classified in the same order for each activity code.
- 4. Classifiers independently reviewed each return and recorded if it should (or should not) be examined for unreported income. Results of classification were recorded on a scorecard. Appendix A contains a sample scorecard.
- 5. Classifiers were instructed to safeguard their scorecards. Whenever scorecards were not in use, they were collected and secured by the Rep-DC or Rep-Denver.
- 6. Completed scorecards were sent to the Office of Research for analysis and a report of findings.

Procedures For Treating Data

1. Classification By Experts

Scorecards were used by the experts to classify the 50 returns in each activity code. Eleven experts generated 88 scorecards (11 scorecards for each of eight activity codes). Scorecards were tabulated and analized in two-by-two tables. Two-by-two tables displayed (1) counts of "Yes" and "No" unreported income, with (2) counts of high and low UI Scores. A statistical test of independence of classification was applied to each table. Chi-Square was calculated, and when it was greater than 3.841, tables were statistically significant (i.e. the probability of such counts occurring randomly was less than five percent).

Appendix B contains the responses of each classifier and their average responses for each activity code. Classifier responses were tabulated and tested for statistical significance in a two-by-two table, as in Figure 1.

Reference: Clark and Schkade, loc. cit.

⁸ Charles T. Clark and Lawrence L. Schkade, <u>Statistical Analysis For Administrative Decisions</u> (Cincinnati: South-West Publishing Co., 1974), pp. 376-378.

⁹ The statistical test of independence of classification follows:

^{1.} H_o: Hypothesis - Responses of "YES" and "NO" to examine returns for unreported income were independent of High and Low UI Scores.

^{2.} H_a: Alternative Hypothesis - Responses of "YES" and "NO" to examine returns for unreported income were associated with High and Low UI Scores at levels that were statistically significant.

^{3.} A five percent probability if H_o occurring randomly requires a Chi-Square of 3.841. (one degree of freedom).

^{4.} Criterion: Reject H_o (Accept H_a) if Chi-Square > 3.841.

Figure 1

Activity Code 53X,

Tabulation Of Classifier Responses

UI SCORES	"YES" UI	"NO" UI	TOTAL
Top 2%	XX	XX	25
Bottom 50%	XX	XX	25
TOTAL	xx	XX	50

2. Classification By Majority Audit Sum

Returns were also classified by Audit Sum. An Audit Sum was the frequency with which the eleven classifiers recommended a return be examined for unreported income. The maximum Audit Sum was eleven; all eleven classifiers recommended auditing a return. The minimum Audit Sum was zero; no classifiers recommended auditing a return.

Appendix C contains classification by majority Audit Sums of six or more. Six or more classifiers were a majority. For each return, classification by Majority Audit Sum resulted in one of two outcomes; (1) audit the return if the Audit Sum was six or more, or (2) do not audit the return if the Audit Sum was five or less. Audit Sums were tabulated and tested for statistical significance¹⁰ in a two-by-two table, as in Figure 2.

Figure 2

Activity Code 53X

Classification By Majority Audit Sums GE 6

Audit Sum ...

UI SCORES	GE 6	LE 5	TOTAL
Top 2%	XX	XX	25
Bottom 50%	XX	XX	25
TOTAL	XX	XX	50

 $^{\rm 10}$ The statistical test of independence of classification follows for majority responses :

Reference: Clark and Schkade, loc. cit.

^{1.} H_o: Hypothesis - Six or more Classifiers responding "YES" (to examine returns for unreported income) or "NO" (to accept returns as filed) were independent of High or Low UI Scores.

^{2.} H_a: Alternative Hypothesis - Six or more Classifiers responding "YES" (to examine returns for unreported income) or "NO" (to accept returns as filed) were associated with High or Low UI Scores at levels that were statistically significant.

^{3.} A five percent probability if H_o occurring randomly requires a Chi-Square of 3.841. (one degree of freedom).

^{4.} Criterion: Reject H_o (Accept H_a) if Chi-Square > 3.841.

3. Classification By Optimal Audit Sum Cutoff

Audit Sums were used as a scoring system. The 50 returns in each activity code were sorted by Audit Sums, highest to lowest, from Audit Sum 11 to Audit Sum zero. With no other information for return selection, one might logically select an Audit Sum cutoff of six; selection by a majority of classifiers. However, with UI Scores as additional information, the optimal Audit Sum cutoff was derived for each activity code.

Among the 50 returns in each activity code, 25 had high UI Scores and 25 had low UI Scores. If there were an association between UI Scores and Audit Sums, it should be evident at the Audit Sum cutoff that evenly split the inventory at about 25 returns. Audit Sum cutoffs could range from one to eleven. If classifiers, on average, selected 10 of the 50 returns for audit, the Audit Sum cutoff could be as low as one. On the other hand, if classifiers, on average, selected 40 of the 50 returns for audit, the Audit Sum cutoff could be as high as 11.

The optimal Audit Sum cutoff was determined using the Chi-Square statistic. At each alternative cutoff of one to eleven, Chi-Square was computed to measure the association above and below the Audit Sum cutoff with the number of high and low UI Scores. The cutoff with the greatest value of Chi-Square was defined as the optimal Audit Sum cutoff. ¹¹

Appendix C contains summary results for the alternative cutoffs of one to eleven. The cutoff with the largest value of Chi-Square in Appendix C is fully displayed in Appendix D, for each activity code.

Observations

1. Average Responses

Appendix B contains the average responses of classifiers for each activity code. Average responses are summarized in Table 1.

In Table 1,¹² average responses varied widely by activity code grouping. Nonbusiness Activity Codes 532, 533, and 534, displayed the lowest number identified for audit. However, almost all the returns identified for audit had high UI Scores. Only 11 to 13 returns were identified for audit, while 9 to 12 of these returns displayed high UI Scores, on average.¹³ The responses of all classifiers were statistically significant in Activity Code 532, ten were significant in Activity Code 533, and eight were significant in Activity Code 534.

¹¹ Chi-Square was applied similarly in segmentation modeling by the software package, CHAID (Chi-squared Automatic Interaction Detector), <u>SPSS for Windows: CHAID, Release 6.0</u> (Chicago: SPSS Inc., 1993).

¹² In Tables 1, 2, and 3, two-by-two tables were displayed in a linear format for ease of viewing. The following mathematical relationships in Tables 1, 2, and 3, may not be apparent;

^{1. (}Top 2% under YES UI) + (Top 2% under NO UI) = 25 for activity codes & 200 for total.

^{2. (}Bot. 50% under YES UI) + (Bot. 50% under NO UI) = 25 for activity codes & 200 for total.

^{3. (}YES UI Total) + (NO UI Total) = 50 for activity codes & 400 for total.

¹³ Average values were rounded to whole numbers in the text to ease communication and understanding.

Table 1

Average Responses

Phase 1	"YES"	Unreported I	ncome	"NO"	Unreported In	ncome	
Activity Code	Top 2% Scores	Bot. 50% Scores	Total	Top 2% Scores	Bot. 50% Scores	Total	Chi- Square
532	11.8	1.3	13.1	13.2	23.7	36.9	11.508
533	10.9	0.9	11.8	14.1	24.1	38.2	11.081
534	9.0	1.6	10.6	16.0	23.4	39.4	6.475
535	23.7	16.4	40.1	1.3	8.6	9.9	6.825
536	22.2	9.7	31.9	2.8	15.3	18.1	13.435
537	21.1	5.7	26.8	3.9	19.3	23.2	18.984
538	16.6	7.7	24.4	8.4	17.3	25.6	6.354
539	14.5	6.9	21.5	10.5	18.1	28.5	4.761
TOTAL	129.9	50.3	180.2	70.1	149.7	219.8	64.048

Nonfarm Business Activity Codes 535, 536, and 537, displayed the highest number of returns identified for audit, and, most noteworthy, this number included the bulk of returns with high UI Scores. Among Nonfarm Businesses, 27 to 40 returns were identified for audit, while 21 to 24 of these returns displayed high UI Scores, on average. The responses of eight classifiers were statistically significant in Activity Code 535, while the responses of all eleven classifiers were significant in Activity Codes 536 and 537.

Farm Business Activity Codes 538 and 539 displayed about half the 50 returns for audit, while about two-thirds of this number were returns with high UI Scores. In Activity Codes 538 and 539, the responses of only six of the eleven classifiers were statistically significant.

Total average responses were the sums of the average responses for each activity code. Overall, 130 returns of the 200 returns with high UI Scores were identified for examination, and 150 of the 200 returns with low UI Scores were accepted as filed, on average.

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2. Classification By Majority Audit Sum

Appendix C contains classification by Majority Audit Sums for each activity code. Results are summarized in Table 2. Audit Sums were the numbers of classifiers that identified each return for audit. The majority Audit Sum was six or more classifiers, a majority of the eleven. Classification was statistically significant for each activity code.

In Table 2, classification by Majority Audit Sum varied widely by activity code grouping. Nonbusiness Activity Codes 532, 533, and 534, displayed the lowest number identified for audit. Only 7 to 12 returns were identified for examination. However, **all** of these returns displayed high UI Scores.

Nonfarm Business Activity Codes 535, 536, and 537, displayed the highest number of returns (28 to 43) identified for audit, and, most noteworthy, this number included **all** returns with high UI Scores. As a consequence, **all** returns identified as 'No UI' had low UI Scores.

Farm Business Activity Codes 538 and 539, displayed about half the 50 returns for audit, and about 75 percent of these were returns with high UI Scores.

Total results were the sum of results for each Activity Code. Overall, 142 returns of the 200 returns with high UI Scores were identified for examination, and 158 of the 200 returns with low UI Scores were accepted as filed.

Table 2

Majority Audit Sum GE 6

Phas		"YES"	Unreported I	ncome	"NO"	Unreported Ir	ncome	
Activity Code	"YES" UI Audit Sums GE	Top 2% Scores	Bot. 50% Scores	Total	Top 2% Scores	Bot. 50% Scores	Total	Chi- Square
532	6	12	0	12	13	25	38	15.789
533	6	10	0	10	15	25	40	12.500
534	6	7	0	7	18	25	43	8.140
535	6	25	18	43	0	7	7	8.140
536	6	25	10	35	0	15	15	21.429
537	6	25	3	28	0	22	22	39.286
538	6	19	6	25	6	19	25	13.520
539	6	19	5	24	6	20	26	15.705
TOTAL	N/A	142	42	184	58	158	216	100.644

3. Classification By Optimal Audit Sum Cutoff

Appendix D contains classification by the optimal Audit Sum cutoff for each activity code. Results are summarized in Table 3. The optimal cutoff was that with the greatest association between classification by Audit Sums and high and low UI Scores. The cutoff with greatest value of Chi-Square was optimal. Results were statistically significant for all activity codes.

In Table 3, classification by optimal cutoff did not vary widely by activity code grouping. Returns identified for audit varied from 24 to 36, of which 22 to 25 displayed high UI Scores. In every activity code, **almost all** the returns with high UI Scores were identified for audit.

Nonbusiness Activity Codes 532, 533, and 534, displayed the lowest optimal cutoffs of one and two; Nonfarm Business Activity Codes 535, 536, and 537, displayed the highest optimal cutoffs of seven to ten; and Farm Business Activity Codes 538 and 539 displayed intermediate optimal cutoffs of four and five.

Total results were the sum of results for each activity code. Overall, 188 returns of the 200 returns with high UI Scores were identified for examination, and 160 of the 200 returns with low UI Scores were accepted as filed.

Table 3
Optimal Audit Sums

Phas	se 1	"YES"	Unreported I	ncome	"NO"	Unreported In	ncome	
Activity Code	"YES" UI Audit Sums GE	Top 2% Scores	Bot. 50% Scores	Total	Top 2% Scores	Bot. 50% Scores	Total	Chi- Square
532	2	22	2	24	3	23	26	32.051
533	2	24	2	26	1	23	24	38.782
534	1	25	11	36	0	14	14	19.444
535	10	22	6	28	3	19	22	20.779
536	8	25	3	28	0	22	22	39.286
537	7	24	0	24	1	25	26	46.154
538	5	22	7	29	3	18	21	18.473
539	4	24	9	33	1	16	17	20.053
TOTAL	N/A	188	40	228	12	160	172	223.419

Conclusions

1. The UI-DIF Formulas were validated for Activity Codes 532 to 539.

The UI-DIF Formulas were validated in Table 3. In each activity code, returns with high UI Scores were identified most often for audit, while returns with low UI Scores were identified least often for audit. Returns with high UI Scores were almost identical to returns with high audit frequencies, and returns with low UI Scores were almost identical to returns with low audit frequencies.

NOTE: Operational classification in the field is different than classification by 11 experts in unreported income. Operationally, classification is by one classifier and only returns with high UI Scores are classified. Average results from returns with high UI Scores were most similar within activity code groupings. Activity code groupings follow;

Nonbusiness - Activity Codes 532, 533, and 534
Nonfarm Business - Activity Codes 535, 536, and 537
Farm Business - Activity Codes 538 and 539

2. In Activity Codes 535, 536, and 537, high UI Scores were almost always selected for audit.

On average, classifiers identified for audit over 20 of the 25 returns with high UI Scores. Select rates ranged from 84 percent to 96 percent among average responses (Table 1) and were 100 percent for majority responses (Table 2) in each of the three classes. Such high select rates by experts in unreported income suggest acceptable rates by less experienced classifiers.

Nonfarm Business Activity Codes 535, 536, and 537 were the best candidates for UI Scores.

3. In Activity Codes 538 and 539, high UI Scores were often selected for audit.

On average, classifiers identified for audit over half the returns with high UI Scores. Select rates were 60 and 68 percent among average responses (Table 1) and were 76 percent for majority responses (Table 2) in each of the two classes. The moderate select rates by experts in unreported income suggest low to acceptable rates by less experienced classifiers. Farm Business Activity Codes 538 and 539 were marginal candidates for UI Scores.

4. In Activity Codes 532, 533, and 534, high UI Scores were often accepted as filed.

On average, classifiers identified for audit less than half the returns with high UI Scores. Select rates ranged from 36 percent to 48 percent among average responses (Table 1) and from 28 percent to 48 percent for majority responses (Table 2). Such low select rates by experts in unreported income suggest even lower select rates by less experienced classifiers. Nonbusiness Activity Codes 532, 533, and 534 were the worst candidates for UI Scores.

Recommendations

- 1. Chief Counsel should be prepared to defend the UI Scores as "a reasonable indication that there is a likelihood of unreported income", if UI Scores are intended to justify "financial status or economic reality examination techniques to determine the existence of unreported income." ¹⁴
- 2. Nonfarm Business Activity Codes 535, 536, and 537 are highly recommended for UI-DIF Formulas and for further testing. Nonfarm Business returns with high UI Scores were almost always classified for audit by experts in unreported income.
- 3. Farm Business Activity Codes 538 and 539 are marginally recommended for UI-DIF Formulas and for further testing. Farm Business returns with high UI Scores were usually classified for audit by experts in unreported income.
- 4. Nonbusiness Activity Codes 532, 533, and 534 are not recommended for UI-DIF Formulas, at this time, but are recommended for further testing. Nonbusiness returns with high UI Scores were usually accepted as filed by experts in unreported income.

The Secretary shall not use financial status or economic reality examination techniques to determine the existence of unreported income of any taxpayer unless the Secretary has a reasonable indication that there is a likelihood of such unreported income.

 $^{^{14}}$ The IRS Restructuring and Reform Act of 1998, Code Sec. 7602, "Examination Of Books And Witnesses", (e), "Limitation On Examination On Unreported Income", states as follows:

Appendix A

Sample Scorecard

Activity Code: Classifier:		Should The Retu For Unrepor	
Seq#	TIN	YES	NO
1	xxxxxxxx		
2	XXXXXXXXX		
3	xxxxxxxx		
4	xxxxxxxx		
5	xxxxxxxx		
6	xxxxxxxxx		
7	xxxxxxxxx		
8	xxxxxxxx		
9	XXXXXXXXX		
10	XXXXXXXX		-
11	XXXXXXXXX		
12 13	XXXXXXXXX		
14	XXXXXXXXX		
15	XXXXXXXXX		
16	xxxxxxxx		
17	xxxxxxxx		
18	xxxxxxxx		
19	xxxxxxxx		
20	xxxxxxxx		
21	xxxxxxxxx		
22	xxxxxxxx		
23	xxxxxxxx		
24	xxxxxxxx		
25	XXXXXXXX		_
26	XXXXXXXX		
27 28	XXXXXXXXX		
29	XXXXXXXXX		
30	XXXXXXXXX		
31	xxxxxxxx		
32	xxxxxxxx		
33	xxxxxxxx		
34	xxxxxxxx		
35	xxxxxxxx		
36	xxxxxxxx		
37	XXXXXXXXX		
38	XXXXXXXXX		_
39	XXXXXXXXX		-
40	XXXXXXXXX		
41 42	XXXXXXXXX		
43	XXXXXXXXX		1
44	XXXXXXXXX		
45	XXXXXXXXX		
46	xxxxxxxx		
47	xxxxxxxx		

Appendix B

Average Responses By 11 Classifiers

<u>Jnrerpo</u>	ortec	Inco	ome	e S	tuc	Ιγ	(F	Pha	ase	1)								<u>A</u>	ctivity (Code 53	32		
Activity C	ode:	532																					
				Sho	uld	The	Ret	urn l	Be E	xan	nine	1						Ave	erage F	Respons	ses		
			1 1									=NO											
Geq	UI :	TOP						SIFIE			Ť.	ПТ		AUDIT									
		2%	1	2	3	4					9	10	11	SUM				"YES" UI			"NO" UI		
	869	1	1	1	1	1	1	1	1	1 4	1	1	1	11	Classifiers		Top 2%	Bot. 50%	Total	Top 2%	Bot. 50%	Total	Chi-Square
	635	1	0	0	0	0	0	0	0	0	0	0	0	0	Classillers		10p Z /6	Bot. 30 /6	lotai	10p 2 /6	B01. 30 /6	<u>10ta1</u>	Cin-Square
	365	1	1	1	1	1	1					1	1	11	Classifier 1		14	1	15	11	24	35	16.095
	223	0	0	0	0	0	0			+-+		0	0	0	Classifier 2		14	0	14		25	36	19.444
5 .	223	0	0	0	0	0	0		0	0	0	0	0	0	Classifier 3		9	3	12	16	22	38	3.947
	223	0	0	0	0	0	0					0	0	0	Classifier 4		13	1	14	12	24	36	14.286
	223	0	0	0	0	0	0					0	0	1	Classifier 5		7	0		18	25	43	8.140
	223	0	0	0	0	0	0					0	0	1	Classifier 6		11	1	12		24	38	10.965
	223	1	0	0	0	0	1				++	1	0	0	Classifier 7		12 16	0 6	12 22		25 10	38 28	15.789
	707 223	-	0	1	0	0	0					0	0	8	Classifier 8 Classifier 9		10	1	11	15	19 24	39	8.117 9.441
	707	1	0	1	0	1	0				+	0	0	3	Classifier 10		19	1	20		24	30	27.000
	385	1	1	1	0	1	0					1	0	5	Classifier 11		5	0	5	20	25	<u>45</u>	5.556
	385	1	1	0	0	1	0				++	1	0	6	1.0000000000000000000000000000000000000				1000			-	
	707	1	1	1	0	0	0					0	0	2	Classifier Ave	erages	11.82	1.27	13.09	13.18	23.73	36.91	N/A
	223	0	0	0	1	0	. 0					0	0	2									
	386	1	1	0	0	0	0					0	0	3									
	386	1	1	1	1	1	. 0					1	0	8			IN/EC!!						
	707 223	0	0	0	0	0	0				+	0	0	1 0	UI SCORES		"YES" UI	"NO" UI	TOTAL				
	223	0	0	0	0	0	0					0	0	0	OI SCORES		- OI	UI UI	TOTAL	-			
	223	0	0	0	0	1	0				++	0	0	1	Top 2%		11.82	13.18	25				
	223	ō	0	0	1	0	0					0	0	1	1.3 P 2.13								
	732	1	0	0	0	0	0					1	0	1	Bottom 50%		1.27	23.73	25				
25 1	603	1	0	0	0	0	0	1	0	0	0	1	0	2									
	223	0	0	0	0	0	0					0	0	0	TOTAL		13.09	36.91	50				
	676	1	0	0	1	0	1				+	1	0	6									
	223	0	0	0	0	0	0					0	0	0									
	223 223	0	0	0	0	0	0					0	0	0	1. H _o : Averag	ao Clacc	ifior roenon	cae wara ind	lanandant (of High or Lo	w III Scorec		
	223	0	1	0	0	0	0					0	0	1	1. No. Averag	ge Class	iller respon	ces were inc	iebennem (orringir or Lo	W OI Scoles		
	707	1	1	1	0	1	1			+-+	++	1	1	10	2. Ha: Aver	age Clas	sifier resno	nces were a	ssociated	with High or	Low ULSco	es	
	386	1	1	1	1	0	0					1	o	6	2. 70. 110.	ago olac					2011 01 0001		
	223	0	0	0	0	0	0					0	0	0	3. Random c	hance, n	no greater tl	nan 5%, reqi	uires a chi-	square value	e of 3.841 or	less.	
35	223	0	0	0	0	0	0					0	0	1						1 100	r ii		
	223	0	0	0	0	0	0						0	0	4. Criterion:	Reject H	lo (Accept	Ha) at 5% if	chi-square	e > 3.841.			
	223	0	0	0	0	0	0						0	1									
	2055	1	1	0	1	1	. 0					1	1	6									
	223 2183	1	0	0	1	0	0					1	0	5				Computat	tion of C	hi-Sauare			
	478	1	1	0	0	1	0					1	0	6				Somputa		n-oquare			
	707	1	1	1	1	1	1			+-+			1	10			Observed	Expected					
	223	o .				0						0		0			(0)	(E)	(O-E)	(O-E) ²	(O-E) ² /E		
	385	1	1	0	0	0	0	1	0	1	1	1	0	5			1 86 86	33 13	15 20	1 00 00	100 Side		
	707	1		1	0	1	0	0	0	0		1	0	4	"YES" UI & T		11.8182	6.5455	5.2727	27.8017	4.247		
	223	0	0					0	0	0	0	0		0	"YES" UI & B			6.5455	-5.2727	27.8017	4.247		
	707	1	0			0		0	1	1	0	0	0	3	"NO" UI & To	p 2%	13.1818	18.4545	-5.2727	27.8017	1.506		
	603	1	0			0						1		2	"NO" UI & Bo	ottom 50°	23./273	18.4545	5.2727	27.8017	1.506		
	223	1	0	0	1		0	0				0	0	0 <u>6</u>					C	: :hi-Square:	11 502		
30 1	611	1	0	1	1	11	U	II o	11	11.1	110	T	U	0					·	.m-əquare:	11.000		
(ES UI) &	(Ton 2	2%)	14	14	9	13	7	11	12	16	10	19	5	11.82									
ES UI Total		. 70)										20		13.09									
											11		T	1.55.55									
VO UI) & ((Botton	1 50%)	24	25	22	24	25	24	25	19	24	24	25	23.73									
O UI Total			35	36	38	36	43	38	38	28	39	30	45	36.91									

Unrerpo	ortec	Inco	ome	e S	tuc	yk	(Pha	ise	1)								<u>A</u>	ctivity (Code 53	3		
Activity C	ode:	533																					
				Sho	uld	The	Ret	urn l	Be E	xan	nine	1						Ave	erage F	Respons	ses		
			1 1					me?				711											
Seq	UI	TOP			İ			SIFIE			ľ,			AUDIT									
		2%	1	2	3	4	_			8	9	<u>10</u>	11	SUM				"YES" UI			"NO" UI		
	2272	1	1	0	1	1	0	1	0		1	0	0	4	Classifiers		Top 2%	Bot. 50%	Total	Top 2%	Bot. 50%	Total	Chi-Square
	380	0	0	0	0	0	0	0				0	0	0	Classifiers		10p Z /0	DOI: 30 76	_ I Utai	1002/6	DOI: 30 /6		Cin-square
	380	ŏ	0	ō	0	0	0					0	0	1	Classifier 1		12	4	16	13	21	34	5.882
	1777	1	0	1	0	0	0					1	0	4	Classifier 2		17	0	17	8	25	33	25.758
	1693	1	0	1	0	0	0						0	3	Classifier 3		7	1	8	18	24	42	5.357
	352	0	0	0	0	0	0					0	0	0	Classifier 4		8	0	8	17	25	42	9.524
	352	0	0	0	0	0	0					0	0	0	Classifier 5		4	1	5	21	24	45	2.000
	1742	1	1	1	1	0	. 0					1	0	6	Classifier 6		14	1	15 12		24	35 38	16.095
	1824 1782	1	0	1	1	1 0	1		1 0	+	0	0	0	8 4	Classifier 7 Classifier 8		11 9	1 2	11	16	24 23	39	10.965 5.711
	1895	1	1	0	1	1	0		0			0	0	4	Classifier 9		10	0	10	15	25	40	12.500
	352	o ·	0	ō	0	0	0		+-+		+-+	0	0	ō	Classifier 10		20	0	20	5	25	30	33.333
	1824	1	0	1	0	0	1		1			1	1	7	Classifier 11		8	<u>0</u>	8	17	<u>25</u>	42	9.524
	380	0	0	0	0	0	0		0			0	0	0									
	380	0	1	0	0	0	1					0	0	2	Classifier Avera	ages	10.91	0.91	11.82	14.09	24.09	38.18	N/A
	1769	1	0	1	0	. 0	0					1	0	2									
	352 380	0	0	0	0	0	0					0	0	0 0									
	2085	1	1	1	0	1	0				1	1	1	9			"YES"	"NO"					
	1741	1	0	6	0	0	0		+-+	+-+	+-+	1	0	3	UI SCORES		UI	UI	TOTAL				
	1663	1	0	1	0	0	0					0	1	4									
22 1	1780	1	0	0	0	0	0	0	0	0	1	0	0	1	Top 2%		10.91	14.09	25				
	352	0	0	0	0	0	0					0	0	0									
	1781	1	0	1	0	0	0					1	0	2	Bottom 50%		0.91	24.09	25				
	380	0	0	0	0	0	0				+	0	0	0	TOTAL		44.00	20.40					
	380 1832	1	0	0	0	0	0		1			0	0	5	TOTAL		11.82	38.18	50				
	1808	1	1	1	1	1	0			+-+	+	1	1	8									
	378	o .	Ö	0	0	0	0					0	0	0								- 10	
	380	0	0	0	0	0	0					0	0	1	1. H _o : Average	e Classi	ifier respon	ces were ind	lependent (of High or Lo	w UI Scores		
	380	0	0	0	0	0	0	0	0	0	0	0	0	0									
	352	0	1	0	0	. 0	0					0	0	1	2. Ha: Averag	ge Clas	sifier respo	nces were a	ssociated	with High or	Low UI Sco	es.	
	380	0	0	0	1	0	0				+	0	0	3						<u> </u>			
	1701	1	0	1	0	0	. 0					1	0	2 4	3. Random ch	nance, n	io greater th	nan 5%, requ	uires a chi-	square value	e of 3.841 or	less.	
	1914 352	0	0	0	0	0	0					0	0	0	4. Criterion: F	Daiact H	la (Accent	Ha) at 5% if	chi-cauare	> 3.8/11			
	1697	1	1	1	0	0	0					1	1	6	4. Ontendil. R	reject II	o (mocehi	a) at 570 II	om oquale	0.041			
	380	i	0	o	0	0	0				+-	0	0	0									
39 1	1765	1	0	1	0	1	0	1	1	0	1	1	0	6									
	352	0	1	0	0	0	0					0	0	1				Computat	tion of Cl	ni-Square			
	352	0	0	0	0	0	0					0	0	0			01						
	1689	1	0	0	0	0	0		0			1	0	2			Observed (O)		/O.D.	/O E)2	/O E-2/E		
	380 1896	0	0			0				+-+		0	0	2			(0)	(E)	(O-E)	(O-E) ²	(U-E)7/E		
	2329	1							1				1	8	"YES" UI & To	n 2%	10.9091	5.9091	5.0000	25.0000	4.231		
	1924	1	1							1				8	"YES" UI & Bo			5.9091	-5.0000	25.0000	4.231		
	1699	1	1	0	0	1	1	1	1	0	1	1	1	8	"NO" UI & Top	2%	14.0909	19.0909	-5.0000	25.0000	1.310		
48	352	0	1			0	0	0	0	0		0		1	"NO" UI & Bott	tom 50°	24.0909	19.0909	5.0000	25.0000	1.310		
	352	0	0					0	0			0		0							44.554		
50	380	0	0	0	0	0	0	0	0	0	0	0	0	0					С	hi-Square:	11.081		
VECTIN A	/Тен С	10/3	10	17	7	0		4.4	4.4	0	40	20	0	10.01									
YES UI) & /ES UI Tota		: 70)						14 15						10.91 11.82									
O OI TOLA	41		10	1.6	0	0	9	10	12	11	10	20	0	11.02									
NO UI) & ((Botton	1 50%)	21	25	24	25	24	24	24	23	25	25	25	24.09									
IO UI Total			34	33	42	42	45	35	38	39	40	30	42	38.18									

Jnre	rporte	d Inco	me	e S	tuc	yk	(F	2ha	ase	1)								<u>A</u>	ctivity C	Code 53	4		
ctivit	v Code:	534																					
				Sho	uld	The	Ret	urn	Be E	xan	nine	i						Ave	erage R	espons	es		
		F	or t	Inre	роп	ted I	nco	me?	(1	=YE	S) (0	=NO						-					
eq	UI	TOP				CL.	ASS	IFIE	R					AUDIT									
#	Score	2%	1	2	3	4	5	6	Z	8	9	10	11	SUM				"YES" UI			"NO" UI		
1	1507	1	1	0	0	n	n	1	По	1	l n	1	0	4	Classifiers		Top 2%	Bot. 50%	Total	Top 2%	Bot. 50%	Total	Chi-Squar
2	1374	1	o	ō	ō	Ō	ō	Ö	+-+	Ö	ŏ	1	ŏ	1	Situation		TOPEN	Dott 00 10		100 270	DOC DOTE	Total	om-oqua.
3	1534	1	1	0	0	0	0				0	1	0	3	Classifier 1		16	6	22	9	19	28	8.117
4	1535	1	1	1	1	0	1				0	1	0	7	Classifier 2		13	1	14	12	24	36	14.286
5	401	0	1	0	0	0	0				0	0	0	1	Classifier 3		8	0	8	17	25	42	9.524
6	375	0	0	0	0	0	0				0	0	0	0	Classifier 4		. 7	1	8	18	24	42	5.357
7	1423	1	0	0	0	0	0				0	1	0	1	Classifier 5		3	2	5	22	23	45	0.222
9	375 375	0	0	0	0	0	0				0	0	0	1	Classifier 6 Classifier 7		11 2	2 0	13 2	14 23	23 25	37 48	8.420 2.083
10	375	0	0	ö	ŏ	0	ö				l ö	0	ö	6	Classifier 8		13	5	18	12	20	32	5.556
11	1424	1	1	1	ŏ	0	0				ŏ	1	ŏ	4	Classifier 9		4	0	4	21	25	46	4.348
2	375	Ö	Ō	Ö	ō	0	Ō				ō	Ö	ō	Ö	Classifier 10		19	1	20	6	24	30	27.000
13	375	0	0	0	0	0	0				0	0	0	0	Classifier 11		3	0	3	22	<u>25</u>	<u>47</u>	3.191
14	395	0	0	0	0	0	0				0	0	0	0	100000000000000000000000000000000000000								
5	395	0	0	0	0	0	0				0	0	0	0	Classifier Ave	erages	9.00	1.64	10.64	16.00	23.36	39.36	N/A
16	375 1499	1	1	0	0	0	0				0	0	0	1									-
8	1499	1	1	1	1	0	1	+-+			0	1	8	7				5					
19	1379	1	o	Ö	Ö	0	Ö				10	1	ő	2			"YES"	"NO"					
0	375	Ö	ō	ŏ	ō	ō	ō				Ιŏ	Ó	ŏ	ő	UI SCORES		UI	UI	TOTAL				
1	375	0	0	0	ō	1	Ō				Ō	Ō	0	1									
22	375	0	0	0	0	0	0	0	0	0	0	0	0	0	Top 2%		9.00	16.00	25				
23	375	0	0	0	0	0	0				0	0	0	0									
24	401	0	1	0	0	. 0	0				0	0	0	2	Bottom 50%		1.64	23.36	25				
25	375	0	0	0	0	0	0				0	0	0	0									
26	1440 395	0	0	0	0	0	0				0	1	0	3	TOTAL		10.64	39.36	50				
28	417	0	1	0	ö	0	1				6	0	8	3									
9	1470	1	1	ö	ö	0	Ö				Ö	6	0	1									
0	1486	1	1	1	ŏ	1	ŏ		1		Ιō	Ö	ŏ	5	1. H _o : Avera	ge Class	ifier respon	ces were inc	lependent o	f High or Lo	w UI Scores		
1	401	0	0	0	0	0	0	0	0	0	0	0	0	0		-			•				
32	1402	1	0	0	0	0	0				0	1	0	2	2. Ha: Aver	rage Clas	sifier respo	nces were a	ssociated v	with High or	Low UI Scor	res.	
33	1519	1	0	0	0	0	0				0	1	0	2									
4	295	0	0	0	0	0	0				0	0	0	1 1	3. Random o	chance, r	no greater th	nan 5%, req	uires a chi-s	square value	of 3.841 or	less.	
5	1363	1	1	1	0	1	0				1	1	0	7						. 2011			
7	1688 1554	1	1	1	1	0	0				0	1	1	9	4. Criterion:	Reject F	10 (Accept	Ha) at 5% if	cni-square	> 3.841.			-
8	397	0	0	0	0	0	0				0	6	8	0									+
9	1419	1	0	0	1	1	0				1	ŏ	ő	4									
0	375	Ó	0	0	Ö	0	1				1.1	Ō	ō	1				Computa	tion of Ch	i-Square			
11	1649	1	1	1	0	0	0				0	1	0	4									
12	1542	1	0	1	0	1	0				0	1	0	3			100000000000000000000000000000000000000	Expected					
13	1362	1	1	1	1	0	0	0	0	1	0	1	0	5			(0)	(E)	(O-E)	(O-E) ²	(O-E) ² /E		
14	375	0			0	0	0	H C	H뉴	1 0	H	0	0	2	"YES" UI & T	Top 20/	0,000	E 2402	2 0010	12 5550	2.540		+
15 16	420 379	0	0	-	H	0	0	10	H음	1 1	110	0	0	1	"YES" UI & I		9.0000	5.3182 5.3182	3.6818 -3.6818	13.5558 13.5558	2.549 2.549		+
17	1376	1		H	H	0	10	i i	╁	1	10	0	i i	1	"NO" UI & To		16.0000	19.6818	-3.6818	13.5558	0.689		1
18	1406	1		1	1	1	ō	1	Ιō	Ιŏ	lo	1	1	7	"NO" UI & Bo			19.6818		13.5558	0.689		
19	1436	1	1			1		1	To	1	1	1	1	9									
50	1397	1	1		0							0		2					CI	hi-Square:	6.475		
علا	1	15.7					1																
) & (Top :											19		9									1
ES UI	lotal		22	14	8	8	5	13	2	18	4	20	3	10.64									
O LUN	0 /D-44	∞ E09/3	10	24	DE.	24	22	22	25	20	25	24	25	22.20									1
io oi)	& (Bottor otal							37						23.36 39.36									-

Jnre	rporte	d Inco	me	S	tuc	γ	(Ph	as	e 1)							<u>A</u>	ctivity C	Code 53	<u> 5</u>		
ctivit	v Code:	535																					
				Sho	uld	The	Ret	turn	Be	Exa	amiı	ned						Ave	erage R	espons	ses		
		F	or t	Inre	рог	ted I	nco	me	? (1=Y	ES)	(0=	NO)	8 7							A - 100 - 11		
eq	UI	TOP			İ			SIFIE		-	TÍ		T		AUDIT								
#	Score	2%	1	2	3	4	5				8	9	10	11	SUM			"YES" UI			"NO" UI		
1	963	1	1	1	1	1	1	1 1	114	П	1	1	1	0	10	Classifiers	Top 2%	Bot. 50%	Total	Top 2%	Bot. 50%	Total	Chi-Square
2	427	0	1	1	1	1	1	1 1	11	+	1	1	0	ö	9	Cidssillers	10p Z /0	DOI. 30 /6	<u>I Utai</u>	10p 2 /6	DOI: 30 /6	Iotal	CIII-3quare
3	460	ō	1	1	1	1	O	1	11	H	1	1	ō	ŏ	8	Classifier 1	25	18	43	0	7	7	8.140
4	456	ō	1	1	1	1	1				1	1	0	1	10	Classifier 2	25	17	42	o		8	9.524
5	1036	1	1	1	1	1	1	1	1		1	1	1	1	11	Classifier 3	25	20	45	0	5	5	5.556
6	456	0	1	1	0	1	1				1	1	0	0	7	Classifier 4	23	17	40	2		10	4.500
7	379	0	0	1	1	1	0				1	0	0	0	5	Classifier 5	21	11	32	4	14	18	8.681
8	963	1	1	1	1	1	1				1	1	1	1	11	Classifier 6	23	22	45	2	3	5	0.222
9	491	0	1	1	1	0	1				1	1	1	0	9	Classifier 7	25	23	48	0	2	2	2.083
10	924 919	1	1	1	1	1	1	0	41	4	1	1	1	1	10 11	Classifier 8 Classifier 9	25 23	24 16	49 39	0 2	1 9	1 11	1.020 5.711
12	872	1	1	1	1	1	1	1 1	+ 1	+	1	1	1	1	11	Classifier 10	25	6	31	0	19	19	30.645
13	485	0	1	1	1	1	6	11	11	$\forall \dagger$	1	il	0	1	8	Classifier 10	21	6	27	4	19	23	18.116
14	449	ō	o	Ö	1	O	ō				o I	ŏ	ō	Ó	3	0.000.000	=-		=1	-	10		10.1.0
15	1019	1	1	1	1	0	1				1	1	1	0	9	Classifier Averages	23.73	16.36	40.09	1.27	8.64	9.91	N/A
16	460	0	1	0	1	0	0		1		1	0	1	0	6								
17	957	1	1	1	1	1	1	++-	1	Ш	1	1	1	1	11								
18	963	1	1	1	1	1	1		1	41	1	1	1	1	11								
19	886	1	1	1	1	1	1	1	1 1	1	1	1	1	1	11	III CCOPEC	"YES"	"NO"	TOTAL				
20	998	1	1	1	1	1	1	11		4	1	1	1	1	11	UI SCORES	UI	UI	TOTAL				-
21	427	0	1	1	1	0	6	1 1	+++	++	1	0	0	0	6	Тор 2%	23.73	1.27	25	-	-		+
23	427	0	1	1	1	1	1	1 1	11		1	1	ŏ	ŏ	9	TOP Z.	20.70	1.27					
24	948	1	1	1	1	1	1	1	111		1	1	1	1	11	Bottom 50%	16.36	8.64	25				
25	427	0	1	0	0	0	0	0	1		1	0	0	0	3								
26	460	0	1	1	1	1	1	1	1		1	1	1	1	11	TOTAL	40.09	9.91	50				
27	460	0	1	1	1	1	1			Ш	1	1	1	0	10								
28	466	0	0	0	0	0	0				1	1	1	0	5 9								
29 30	460 886	1	1	1	1	1	1	1	1 1	++	1	1	1	0	10	1. H _o : Average Classif	ior roennn	ne were inc	lanandant o	of High or Lo	w III Scores		
31	932	1	1	1	1	1	1	1 1	11		1	n	1	1	10	1. 118. Average Classii	iei iesponi	ces were mic	rependent o	i riigii oi Lo	W OI BCOICS	*	
32	924	1	1	1	1	1	Ö		\rightarrow	\rightarrow +	1	1	1	1	10	2. Ha: Average Class	sifier respo	nces were a	ssociated v	with High or	Low UI Sco	res.	
33	886	1	1	1	1	1	0			TT	1	1	1	1	10								
34	502	0	0	0	1	1	0	1	1		1	1	0	0	6	3. Random chance, no	greater th	an 5%, req	uires a chi-s	square value	e of 3.841 or	less.	
35	872	1	1	1	1	1	1	1	1 1	4	1	1	1	1	11								
36	427	0	1	1	1	1	1		1		1	1	0	1	10	4. Criterion: Reject H	o (Accept	Ha) at 5% if	chi-square	> 3.841.			
37	439	0	0	0	1	0	0				1	0	1	0	3								-
38	957 851	1	1	1	1	0	1			\rightarrow	1	1	1	1	9 11	2 2							
10	456	Ó	1	1	1	1	6				11	1	Ö	ó	8			Computa	tion of Ch	i-Square			
41	460	0	0	0	0	0	0				1	0	0	0	2			-		-			
12	934	1	1	1	1	1	0	0				0	1	0	7		Observed	Expected	1				
43	930	1	1	1	1	1	1					1	1	1	11		(0)	(E)	(O-E)	(O-E) ²	(O-E) ² /E		
44	460					1								1	10	W. C.	00 7070	00.0455	0.0010	40 5550	0.670		
45	930	0	1	1	1	1	1						1		11	"YES" UI & Top 2% "YES" UI & Bottom 50		20.0455	3.6818	13.5558	0.676		-
46 47	427 1009	1		1	1	1	1	1	++-	++	1	1	1	1	10		1.2727	20.0455 4.9545	-3.6818 -3.6818	13.5558 13.5558	0.676 2.736		
48	872	1	1	1	1	1	1	1	1		1	1	1	1	11	"NO" UI & Bottom 50°		4.9545		13,5558	2.736		
49	439	0				1	Ö	1	11		1	ö	0	ö	4	1,0 0, 6 50,011 30	2.0004	4.0040	0.0010	,0,000	2., 00		
50	460	Ō	1		1						1			ŏ	9				CI	hi-Square:	6.825		
								199		37				3 /3									
) & (Top :												25		23.73								
ES UI	Total		43	42	45	40	32	45	5 4	8 4	49	39	31	27	40.09								
IO J IP	0 /D-44	FD0/3	7	0	Г	0	4.4		1		1	0	10	10	9.54								1
10 OI)	& (Bottor otal	m 50%)	1	O	5	Ö	14	5 5	2	4	1	9	19	19	8.64 9.91								

<u>Jnre</u>	rporte	d Inc	om	e S	tu	dy	(Ph	as	e	<u>1)</u>								<u>A</u>	ctivity (Code 53	<u>86</u>		
ctivit	v Code	: 536																						
				Sho	uld	The	Re	turn	Ве	Ex	ami	ned							Ave	erage F	Respons	ses		
			For	Unre	por	ted	Inco	ome	?	(1=)	YES)	(0=	NO)											
eq	UI	TOP	5				-	SIFI	-	-					AUDIT									
#	Score	2%	1	2	3	4	5	<u> </u>	<u> </u>	Z	8	9	<u>10</u>	11	SUM				<u>"YES" UI</u>			<u>"NO" UI</u>		
1	497	0	0	0	1	0	Πo	1 1	1	σĦ	0	0	0	0	2	Classifier	<u>s</u>	Top 2%	Bot. 50%	Total	Top 2%	Bot. 50%	<u>Total</u>	Chi-Square
2	486	0	0		1	0					1	0	0	0	3									
3	746	1	1		1	1					0	1	1	0	8	Classifier		24	9		1	16	17	20.053
1	753	1	1		1	1			\rightarrow	1	1	1	1	0	9 7	Classifier :		24	9		1	16	17	20.053
i	489 497	0	0		1	1			\rightarrow	1	1	0	0	0	6	Classifier : Classifier :		25 25	21 10	46 35	0	4 15	4 15	4.348 21.429
,	727	1	1	1	1	1			\rightarrow	1	1	1	ň.	1	9	Classifier		11	10		14	24	38	10.965
3	723	1	1	1	1	1		111	ill	1	1	1	1	1	11	Classifier		23	16		2	9	11	5.711
)	726	1	1	1	1	1	1	111		1	1	1	1	1	11	Classifier		25	12		0	13	13	17.568
0	732	1	1	1	1	1	1	1	1	1	1	1	1	1	11	Classifier l	8	20	7	27	5	18	23	13.607
1	748	1	0	1	1	1				1	1	1	1	1	9	Classifier !		25	6		0	19	19	30.645
2	445	0	0	0	1	0					0	0	1	0	3	Classifier		23	9		2	16	18	17.014
3	470	0	1	1 1	1	0			-		0	1	1	1	8	Classifier	11	<u>19</u>	<u>Z</u>	<u>26</u>	6	<u>18</u>	<u>24</u>	11.538
5	479 498	0	0		1	1					0	0	0	0	2 4	Classifier .	Averages	22.18	9.73	31.91	2.82	15.27	18.09	N/A
6	753	1	1	1	1	1			\rightarrow		0	1	1	0	8	Classiller	Averages	22.10	9.73	31.31	2.02	15.27	10.05	INZA
7	464	o	Ö	Ö	To						0	Ö	1	ŏ	1			1						
8	496	0	1	1	1	1		1 1	1	1	1	1	1	0	10									
9	753	1	1	1	1	1	1	1		1	1	1	1	1	11			"YES"	"NO"					
0	730	1	1	1	1	1			1	1	1	1	1	1	11	UI SCORE	S	UI	UI	TOTAL				
1	744	1	1	1	1	+			\rightarrow +		1	1	1	0	9									
2	475	0	1	0	1	1			-	1	0	0	1	1	7	Top 2%		22.18	2.82	25				
3	746 506	0	1	1	1	1	++-	11:	-	1	0	0	1	1	11 5	Bottom 50	0.0/	9.73	15.27	25				
5	802	1	1	1	1	1		1	#	1	1	1	1	1	11	Dottom 3	U 70	9.13	13.21	23				
6	768	1	1	1	1	1 1		11		1	Ö	1	1	1	10	TOTAL		31.91	18.09	50				
7	732	1	1	1	1	1					ō	1	1	1	8	10.77.2		0.101						
8	804	1	1	1	1	1	0	1	1	1	1	1	1	0	9									
9	456	0	0	0	0						0	0	0	0	0									
0	505	0	1	0	1	0				0	0	0	0	0	2	1. H _o : Ave	erage Class	sifier respon	ces were inc	dependent o	of High or Lo	w UI Scores	3.	
1	754	1	1	1	1	1			1	1	1	1	-	1	10	2.11 0	01	10			OF FE E		erener	
3	738 496	0	1	0	1	1			1	1	0	0	0	1	8	2. Ha: A	werage Cla	ssifier respo	nces were a	associated i	with High or	Low UI Sco	res.	-
4	505	-	6		1	1	+				0	1	0	6	4	3 Dandor	m chanca	no areater th	22n 5% roa	uirae a chi-	∐ square value	of 3.841 or	loce	
5	472	0	0		1	i					0	o ·	0	ŏ	2	J. IXalidoi	in chance,	ilo greater ti	1a11 5 70, 1eq	ulies a clir	Square value	5 01 3.041 01	1655.	
6	511	ŏ	1	1	1	1			\rightarrow	1	1	1	1	1	10	4. Criterio	n: Reject I	Ho (Accept	Ha) at 5% if	f chi-square	> 3.841.			
7	467	0	0	O	0					0	0	0	0	0	2			7 - 1						
8	513	0	0		1	0				1	1	0	1	1	7									
9	488	0	0		1	0					0	0		0	1									
0	486	0	1	0	0					1	0	0	1	1	6				Computa	tion of Cl	ni-Square			
1	753 761	1	1	1	1	1	1			1	1	1	1	1	10 11			Observed	Evposted					
3	822	1	1	1	1	1			+	1	1	1	1	1	11		-	Observed (O)	Expected (E)	(O-E)	(O-E) ²	(O-E) ² /E		
4	411	6		0				116	1	늶	0	o	6	1	2			(0)	(=)	(C^L)	(O-L)	(0-1) /11		
5	790	1	1	Ö	1	11	11	11	TH	1	1	1	1	1	10	"YES" UI	& Top 2%	22.1818	15.9545	6.2273	38.7789	2.431		
6	824	1	1	1	1	1	По	1	П	1	1	1	1	1	10		& Bottom 5		15.9545	-6.2273	38.7789	2.431		
7	498	0	0	0	1	0	0) [0	0	0	0	0	1	"NO" UI &	Top 2%	2.8182	9.0455	-6.2273	38.7789	4.287		
8	766	1	1	1	1	1	0			1	1	1	1	0	8	"NO" UI &	Bottom 50	15.2727	9.0455	6.2273	38.7789	4.287		
9	756	1	1	1	1	1	₩Ö	1 1		1	1	1	1	1	10						L: C	12 125		
0	471	0	11	0	11	111	Πū	111		1	U	1	0	U	6					С	hi-Square:	13.435		
EQ 111) & (Top	2%)	24	24	25) DE	11	1 2	3 2	25	20	25	23	10	22.18									
:S UI		2 /0)		33											31.91		-							
.5 01	, orar		33	33	70	133	112	113		"	4.1	31	J2	20	31.31									
O UI)	& (Botto	m 50%)	16	16	4	15	24	4 9	9 1	13	18	19	16	18	15.27									
	otal			17											18.09									

Jnre	rporte	d Inc	om	e S	tu	dy		(P	ha	se	1)							<u>A</u>	ctivity (Code 53	<u> </u>		
ctivit	v Code	: 537																					
				Sho	ulo	Th	e R	etu	rn E	3e E	xan	ine	d					Av	erage R	espons	ses		
			For	Unre	ęрo	rted	In	con	ie?	(1=	YE!	S) (0	=NC)				1	j)				
eq	UI	TOP	-		Ш_				FIE	_		_			AUDIT								
#	Score	2%	1	2	3	4	-	5	6	Z	8	9	10	11	SUM			<u>"YES" UI</u>			<u>"NO" UI</u>		
1	920	1	1	1	1	C		0	1	1	1	1	1	1	9	<u>Classifiers</u>	<u>Top 2%</u>	Bot. 50%	<u>Total</u>	<u>Top 2%</u>	Bot. 50%	<u>Total</u>	Chi-Square
2	326	0	0		0			유.	0	0	1	0	0	0	0	01	25	4.5	40		40	10	10.500
1	397	0	1		0			0	1	0		8	1	0	6 3	Classifier 1 Classifier 2	25 23			0 2			12.500 32.051
	980	1	1		1			1	1	1	1	1	1	0	10	Classifier 3	24			1			18.015
	920	1	1		1	0		1	1	1	1	1	1	1	10	Classifier 4	13			12			9.191
	405	0	1		0			0	1	0	1	0	0	0	3	Classifier 5	18			7			28.125
3	986	1	1		1			1	1	1	1	1	1	0	9 6	Classifier 6	25			0			17.568
0	935 1018	1	1		1			0	1	1	0	1	1	0	8	Classifier 7 Classifier 8	23			11			32.051 5.333
1	328	6	1		1	1		0	1	1	0	0	0	1	6	Classifier 9	25		26	0		24	46.154
2	957	1	1	1	1	1		1	1	1	0	1	1	0	9	Classifier 10	25	8	33	0	17	17	25.758
3	966	1	1		1	0		0	1	1	0	1	1	1	7	Classifier 11	17	2	<u>19</u>	8	<u>23</u>	<u>31</u>	19.100
4	396	0	1		1	- 0		0	1	0	0	0	0	0	3 7	012 2 25 22 4 22 2	24.00	5.73	20.00	2.04	40.07	22.40	N120
6	969 337	0	1	+	1			0	1	0	0	0	1	0	7 4	Classifier Averages	21.09	5.73	26.82	3.91	19.27	23.18	N/A
7	282	0	1		Ιŏ			ö	ö	0	Ö	Ö	Ö	0	1					-			
8	390	0	1		1	1		0	1	0	1	0	0	0	6								
9	1009	1	1		1	1		1	1	1	1	1	1	1	11		"YES"	"NO"					
0	969	1	1		1			1	1	1	1	1	1	1	11	UI SCORES	UI	UI	TOTAL				
1	337 351	0	0		1 0			0	1	0	0	0	1 0	0	2	Ton 29/	21.09	3.91	25				
3	382	Ö	6		1	1 0		 	1	0	0	0	0	0	3	Top 2%	21.03	3.31	23				
4	920	1	1		1	1		1	1	0	1	1	1	0	9	Bottom 50%	5.73	19.27	25				
5	326	0	0	0	0			0	0	0	0	0	0	0	0								
6	394	0	1		1	10		0	0	1	0	0	1	0	5	TOTAL	26.82	23.18	50				
7	1014 401	1 0	0		1	1		0	0	0	0	0	1	1	11 2		1						
9	409	0	1		1	1		하	1	0	0	0	1	0	4								
0	935	1	1		1	1		ŏ	1	1	ō	1	1	1	9	1. Ho: Average Clas	sifier respon	ces were ind	dependent o	of High or Lo	w UI Scores	3.	
1	388	0	0		1	0		0	0	0	0	0	0	0	1								
2	986	1	1		1	1		1	1	1	1	1	1	1	11	2. Ha: Average Cla	ssifier respo	nces were a	associated v	with High or	Low UI Sco	res.	
3 4	337 1064	1	1		1			0	0	0	0	0	0	1	10	3. Random chance,	no arostor t	han E0/ raa	uiroo o ohi i	oguero uolue	o of 2 0 41 ou	loos	
5	337	0			0			-	6	0		0			0	5. Random chance,	no greater t	nan 5%, req	uires a crii-:	square value	8 UI 3.04 I UI	iess.	
6	337	<u> </u>	1		To			ō T	ō	ŏ	ō	lŏ	1	ŏ	2	4. Criterion: Reject	Ho (Accept	Ha) at 5% if	f chi-square	> 3.841.			
7	949	1	1	1	1	1		1	1	1	1	1	1	1	11				3				
8	969	1	1		1	0		1	1	1	1	1	1	1	10								
9	387 920	1	1		1			0	0	0		1	0	0	2 8			Commute	tion of Ch	i Carrers			
0	326	0	-		0			0	1	0		0	0	0	0		-	Computa	tion of Ch	n-square			
2	1026	1	1	1	1	T c		0	1	1	0	1	1	1	8		Observed	Expected					
3	368	0	1		Ö	0	T	0	0	0	0			0	1		(0)	(E)	(O-E)	(O-E) ²	(O-E) ² /E		
4	1064	1		1					1			1		1	9		100 100		12 10				
5	373	0		0		1 0	1	밁	1	0	0	0	1	0	2	"YES" UI & Top 2%			7.6818	59.0103	4.401		
7	931	0	1	1		1 4	+	쒸	1	- T	0	1	- 0	- 1	9 2	"YES" UI & Bottom 5 "NO" UI & Top 2%	3.9091	13.4091 11.5909	-7.6818 -7.6818	59.0103 59.0103	4.401 5.091		
8	984	1	1	1	1	1	+	1	1	1	0	1	1	1	10	"NO" UI & Bottom 50			7.6818	59.0103	5.091		
9	1026	1	1	1	1	7110	ПΠ	1	1	1	1	1	1	1	10								
0	938	1	1	1	1	1		1	1	1	0	1	1	1	10				CI	hi-Square:	18.984		
		200	-			11.		4.5	25			05	05	4.7	24 66								
ES UI ES UI) & (Top	2%)		23											21.09		-			-			
.S UI	TOTAL	+	40	26	34	+ 11	0	10	J/	20	20	20	33	19	26.82		-						
O UI)	& (Botto	m 50%)	10	22	15	5 2:	2	25	13	22	19	24	17	23	19.27								
	otal			24											23.18				, J				

<u>Jnrer</u>	portec	d Inco	ome	e S	tuc	y	(Pha	ase	1)	2						<u>A</u>	ctivity	Code 53	8			
ctivit	v Code:	538																					
				Sho	uld	The	Ret	turn	Be I	Exa	mine	d					Av	erage F	Respons	ses			+
			or t	Jnre	por	ted I	nco	me?	(1	=YE	S) (0=N	O)				100						
Seq	UI	TOP				CL	ASS	SIFIE	R					AUDIT									
#	Score	2%	1	2	3	4	5	6	Z	8	9	10	11	SUM			"YES" UI			<u>"NO" UI</u>			
1	758	1	1	1	0	1	1	1	1	1 1	1	1 1	11	10	Classifiers	Top 2%	Bot. 50%	Total	Top 2%	Bot. 50%	Total	Chi-Squa	ire
2	706	1	1	1	0	1	1	1	1	1	1	1	0	9									T
3	341	0	0	1	0	0	0			C) (0		1	Classifier 1	20	6	26		19	24	15.705	
4	691	1	1	1	0	0	1					1		7	Classifier 2	24		35		14	15	16.095	
5	769	1	0	1	0	0						1 1	0	4	Classifier 3	3		3		25	47	3.191	
6	310	1	0	1	0	1					1		0	5 9	Classifier 4	14		23 20		16 20	27	2.013	
7	773 846	1	1	1	0	1					1	1 1	10	9	Classifier 5 Classifier 6	15 23		33	10	15	30 17	8.333 15.062	
9	377	0	0	1	6	1	Ö				l o	110		4	Classifier 7	17		29		13	21	2.053	
10	402	Ö	ŏ	Ö	ŏ	Ö					Πŏ		Tŏ	2	Classifier 8	16		30	9	11	20	0.333	
11	691	1	ō	1	Ō	1	0					0		5	Classifier 9	24		31	1	18	19	24.533	
12	763	1	1	1	1	1	1				1	0	0	9	Classifier 10	20		29		16	21	9.934	
13	790	1	1	1	0	1					1	1	0	6	Classifier 11	Z	2	9	<u>18</u>	<u>23</u>	41	3.388	3
14	687	1	1	1	1	1					1 1	11	1	11	OIP DUSCUU ALCUMANA	40.04	7.70	24.20	0.20	47.07	25.04	6120	
15 16	437 724	1	0	0	0	0	0				1	0		4	Classifier Averages	16.64	7.73	24.36	8.36	17.27	25.64	N/A	-
17	710	1	1	1	6	0	1				1	1	10	8									
18	437	Ó	Ö	Ö	ō	ō	O				i lo	ΤĠ		Ö		1							t
19	758	1	1	1	ō	1	1					1 1	To	8		"YES"	"NO"						T
20	364	0	0	1	0	0	0	0	0	C	0	0	0	1	UI SCORES	UI	UI	TOTAL					
1	408	0	0	0	0	1	0							3									
22	322	0	0	0	0	0	0				0 0			0	Тор 2%	16.64	8.36	25					L
23	349	0	1	1	0	1	1				1	0		8	D # 50%	7 70	47.07	25					-
24	761 405	0	1	1	0	0	0				1 1	1 1	1	8 7	Bottom 50%	7.73	17.27	25					-
26	715	1	1	1	ö	1					1	1 1	1	10	TOTAL	24.36	25.64	50					+
27	347	o ·	o	ò	ŏ	Ö	Ö) lo	l o		0	TOTAL	24.30	23.04	30					+
28	379	0	Total	ō	ō	1	ō						10	3									T
29	394	0	0	0	0	0	0	0	0) (0	0		0									
30	408	0	0	0	0	0	0				1	1	0	3	1. H _o : Average Class	sifier respon	ces were inc	dependent i	of High or Lo	w UI Scores			
31	291	0	0	1	0	0	0				0	10		4									-
32	669	1	0	1	0	1					1	1 1	0	5	2. Ha: Average Cla	ssifier respo	nces were a	ssociated	with High or	Low UI Sco	res.		-
33 34	366 431	0	0	1	0	0	1				1	0	1 0	7 7	3. Random chance,	no arostor t	hon E9/ roa	uiroo o ohi	oguero voluc	of 2 041 or	looo		+
5	374	0	1	1	6	1	1				1	1 1	1181	9	5. Random chance,	no greater t	nan 5%, req	uires a crii-	square value	9 01 3.041 01	iess.		+
36	371	0	Ö	Ö	ō	Ö	Ö) lo	ΤĠ		1	4. Criterion: Reject	Ho (Accept	Ha) at 5% if	f chi-square	> 3.841	7	-		t
7	688	1	1	1	ō	1	ō				1	Ťŏ		8		,	,						1
8	310	0	1		0	0	0	0	0		0			2									
9	429	0	0	0	0	0	0							0									
10	702	1	1	1	0	0	1	+	+-		1	1	11-1	8			Computa	tion of Cl	ni-Square				-
11	396 379	0	1	1	0	1	1					1 1	0	9 4		Observad	Evported						+
12	676	1	0	0	0	1		1		1 1	1	1 1	10	6			Expected (E)	(O-E)	(O-E) ²	(O-E)2/E			+
14	747	1	1	1	ň	0	1	1					1	8		(0)	(=)	(O-L)	(O-L)	(0-1) /1			+
15	341	Ö				0	0	1	0	1	0	1	0	3	"YES" UI & Top 2%	16.6364	12.1818	4.4545	19.8430	1.629			1
16	746	1		1	1	1	1	1	1	1	1	1	1	11	"YES" UI & Bottom 5		12.1818	-4.4545	19.8430	1.629			
17	666	1	1	1	0	0	1	1	1	1	1	1	0	8	"NO" UI & Top 2%	8.3636	12.8182	-4.4545	19.8430	1.548			
18	674	1					0	0	0				0	5	"NO" UI & Bottom 50	17.2727	12.8182	4.4545	19.8430	1.548			
19	674	1	1	1		0		1	1	0	1 1		1	7					hi Carre	6 254			-
50	669	1	U	U	U	0	0	0	0	C	110	Πŋ		0				c	hi-Square:	6.354			F
ES LIN	& (Top 2	2%)	20	24	3	14	15	23	17	1 11	6 2	1 20	7	16.64									+
ES UI 1		2 70)									0 3			24.36									1
- 7	1					1		11	11-	11		Ħ	11-1										
O 1 III	& (Bottor	- FO9/3	10	1.4	25	10	20	145	140	1 2			U oo	17.27									

<u>Jnrerp</u>	ortec	d Inco	om	e S	tuc	yk	(F	2ha	ise	1)								<u>A</u>	ctivity (Code 53	9			
Activity	Code:	539																						
				Sho	uld	The	Ret	urn I	Be E	xan	ine	i						Ave	erage F	Respons	es			
			For	Unre	роп	ted I	nco	me?	(1=	YE:	S) (0	=NO												
Seq		TOP				CL	ASS	IFIE						AUDIT										
#	Score	2%	1	2	3	4	5	6	Z	8	9	<u>10</u>	11	SUM				"YES" UI			<u>"NO" UI</u>			
1	1009	1	1	0	0	0	0	0	10	0	1	1	0	3	Classifiers		Top 2%	Bot. 50%	Total	Top 2%	Bot. 50%	Total	Chi-Squa	ıге
2	1045	1	1	0	0	0	1					1	0	6										
3	1064	1	1	0	0	0	1						0	6	Classifier 1		22	5	27	3	20	23	23.269	
5	575 573	0	0	1	0	1	0					0	0	3 3	Classifier 2 Classifier 3		15	6	21 2	10 24	19 24	29 48	6.650 0.000	
6	571	-	ŏ	H	0	0	0					1	0	4	Classifier 4		3	8	11	22	17	39	2.914	
7	535	Ö	To		ō	0	0					Ö	ŏ	0	Classifier 5		18	4	22		21	28	15.909	
8	619	0	0		0	1	1				1	0	0	7	Classifier 6		23	17	40	2	8	10	4.500	
9	1044	1	1	0	0	0	0					1	0	4	Classifier 7		20	12	32		13	18	5.556	
10	481	0	0	0	0	. 0	0			0	0	0	0	1 1	Classifier 8		14	8	22		17	28	2.922	
11	611 510	0	1	0	0	1	1	+		0	1	1	1	11 6	Classifier 9 Classifier 10		18 24	5 9	23 33		20 16	27 17	13.607 20.053	
13	1003	1	1		ö	+	1				1	1	0	7	Classifier 10		24	1	3	23	24	47	0.355	
14	582	o	o	0	ō	1	1			+	1	O	ō	6					1.7			-		T
15	1024	1	1	1	0	0	1			+		1	0	8	Classifier Avera	rages	14.55	6.91	21.45	10.45	18.09	28.55	N/A	
16	504	0	0	-	0	. 0	0					0	0	1										-
17	594 503	0	0	1	0	0	0					1	0	3										Ł
18 19	607	0	H	0	0	0	0					0	0	3			"YES"	"NO"						H
20	1057	1	Ö	1	ō	0	1			1	1	1	ő	7	UI SCORES		UI	UI	TOTAL					+
21	593	o .	1	1	ō	Ō	Ö			0	Ö	1	ō	5	0.000									t
22	594	0	0	0	0	0	0		0	0		0	0	1	Top 2%		14.55	10.45	25					
	1049	1	0	1	0	0	1		1	1	0	1	0	6										
24	477	0	0	0	0	1	0				0	0	0	2	Bottom 50%		6.91	18.09	25				_	H
25 26	556 539	0	0	0	0	0	0					0	0	0 0	TOTAL		21.45	28.55	50					H
27	1009	1	1	0	ŏ	- 6	1					1	0	4	TOTAL		21.43	20.33	30					+
28	528	o	tit	tŏ	ŏ	1	Ö					1	ŏ	4										†
29	548	0	1	0	0	0	0				1	1	0	6								10		
30	520	0	0	0	0	0	0				0	0	0	0	1. H _o : Average	e Classit	fier respon	ces were ind	lependent (of High or Lo	w UI Scores			L
31	994	1	0	0	0	0	0	1			1	1	0	4	2.11	01				25.0 1.0 1		SPAN		-
32 33	603 618	0	0	0	0	1	0				0	0	0	2 4	2. Ha: Averaç	age Class	sifier respo	nces were a	ssociated	with High or	Low UI Scor	es.	_	H
34	1094	1	1	1	ö	0	1				-	1	ö	5	3. Random ch	nance n	n areater th	nan 5% regi	uires a chi-	enuare value	of 3.841 or	loce		H
35	999	1	1	1	ŏ	0	1					1	ŏ	6	S. Italidolli cii	iance, in	o greater ti	iaii 570, requ	unes a cin-	Square value	01 3.041 01	1633.		t
36	1058	1	1	1	0	0	1	+		+		1	1	7	4. Criterion: R	Reject H	o (Accept	Ha) at 5% if	chi-square	> 3.841.				
37	1016	1	1	1	0	0	1	+	+	+-+	1	1	1	9		*	- 10 - 50							
38	1044	1	1	-	0	0	0	1			1	1	0	6										1
39 40	1020 1023	1	1	1	0	1	1				1	1	0	8 8				Computat	tion of C	ni-Sauara			-	-
41	1023	1	1	1	ö	1	1	1		1	1	1	0	9				Somputat		n-oquare				-
42	1002	1	1	Ö	0	0	1	1	1			1	0	7			Observed	Expected						
43	485	0	0	0	0	0	0	1	0	0	0	0	0	1			(O)	(E)	(O-E)	(O-E) ²	(O-E) ² /E			
44	1012	1	1					1	0					4							200			1
45	551	0		0				1		1	0	0	0	2	"YES" UI & To			10.7273	3.8182	14.5785	1.359			-
16 17	1013 996	1	1	-		0		1				1		6	"YES" UI & Bo "NO" UI & Top		6.9091 10.4545	10.7273 14.2727	-3.8182 -3.8182	14.5785 14.5785	1.359 1.021			+
48	1051	1	1	+	1		1					1		9	"NO" UI & Bott	1 ∠ /0 tom 50¢	18 0909	14.2727	3.8182	14.5765	1.021			+
49	1045	1	1	1	Ö									8	.10 0.4 000				J. J. J. J. J. J. J. J. J. J. J. J. J. J					T
50	1128	1	1	0	Ō		1						0	Z					C	hi-Square:	4.761			
										1														1
(ES UI) 8		2%)	22	15	1	3	18	23	20	14	18	24	2	14.55										1
ES UI Tot	tal	_	21	21	2	11	22	40	32	22	23	33	3	21.45									-	H
10 UI) &	(Botten	n 50%)	20	19	24	17	21	8	13	17	20	16	24	18.09										+
O UI Tota		55 70)										17		28.55										+

Appendix C

Majority Audit Sums

mrer	porte	a in	com	9 5	luc	ıy	(P	ma	ise	1)	4										10000	activity (11.			
ctivity	/ Code	: 53	2																<u>C</u>	lassific	ation	By Maj	ority Au	<u>ıdit Sum</u>	<u>ıs GE 6</u>	<u> </u>
		(A)		Sho	ıld	Γhe	Retu	ırn E	Be E	xar	nine	d			(B)		(A) + (B)									
		10000	For	Jnre	port						S) ()=N()		<u>Audit Su</u>	_	2 = "GE 6" was Top 2%				1	Audit	Sum			
Seq	UI	TOP		2	2		_		R		0	10	11	AUDIT	1 = GE 6		0 = "LE 5" was Bot. 50%			III DIE CO	ODEC	GE 6	LE 5	TOTAL		
#	<u>Score</u>		1	2	3	4	<u>5</u>	6	<u></u>	8	9	10	11	SUM	0 = LE 5	2	1 = Misclassified			UI-DIF SC	UKES		1	TOTAL		
2	1869 1635	1	1 0	0	0	0	0	0	0	0	0	0	0	11 0	1 0		1			Top 2%		12	13	25		
3	1365	1	1	1	1		1	1					1	11	1		2			Bottom 50	0%	0	25	25		
4	223	0	0	0	0	0	0	0	0	0	0		0	0	0		0									
5	223	0	0	0	0	0	0	0	0			0	0	0	0		0		-	TOTAL	1	12	38	50		
7	223 223	0	0	0	0	0	0	0	0				0	0 1	0	-	0	4								
8	223	Ö	0	0	0	0	0	0	0				0	1	0		0									
9	223	0	0	0	0	0	0	0	0	0			0	0	0		0					g "YES" (to	examine a	return for uni	reported inc	come)
10	1707	1	0	1	0	1	1	1	1		1	1	0	8	1		2	we	re independ	ent of High	or Low !	JI Scores.				
11 12	223 1707	1	0	0	0	0	0	0	0			0	0	3	0		1	2 H . Si	x or more C	lassifiers r	esnondir	⊥ ng "YES" (to	examine a	return for un	renorted in	come)
13	1385	1	1	1	0	1	0	0	0			1	0	5	0		1		re associate				CAGITITIO G	, starr for dir	. Sported file	201116)
14	1385	1	1	0	0	1	0	1	0	1	1	1	0	6	1		2									
15 16	1707	1	1	1	0	0	0	0	0				0	2	0		1 0	3. Rando	m chance, r	no greater t	han 5%	, requires a d	chi-square v	alue of 3.841	or less.	
17	223 1386	1	0	0	1	0	0	0	1			0	0	2 3	0		1	4 Criterio	n: Reject I	lo (Accent	Ha) at 6	⊣ 5% if chi-squ	pare > 3.841			-
18	1386	1	1	1	1	1	0	1	1	++-		1	0	8	1		2	4. Ontone	in. regeet i	io (riccepi	ina) ar s	o ii ciii oqu	uic > 0.041			
9	1707	1	0	1	0	0	0	0	0				0	1	0		1				Compu	tation of Ch	i-Square			
0	223	0	0	0	0	0	0	0	0				0	0	0	4	0		-	Observed	Event					-
21	223 223	0	0	0	0	0	0	0	0				0	1	0	-	0		1	Observed (O)	Expect (E)	(O-E)	(O-E) ²	(O-E) ² /E		-
3	223	Ö	0	0	1	0	0	0	0				0	1	0		Ö			(0)	(=)	(0 2)	(0.2)	(0 2).2		
24	1732	1	0	0	0	0	0	0	0			1	0	1	0		1		& Top 2%	12	6	6	36	6.000		
25 26	1603 223	1	0	0	0	0	0	1	0			1	0	2	0		1 0	"YES" UI "NO" UI &	& Bottom 5	0 13	6 19	-6 -6	36 36	6.000 1.895		
27	1676	1	0	0	1	0	1	0	0			0	0	6	1		2		. 10p 2% . Bottom 50'		19	6	36	1.895		
8	223	0	0	0	0	0	0	0	0	0		0	0	0	0		0	110								
9	223	0	0	0	0		0	0	0			+-+	0	0	0		0					С	hi-Square:	15.789		
i0 i1	223 223	0	0	0	0	0	0	0	0			0	0	0 1	0	-	0		1		1		1			-
2	1707	1	1	1	0	1	1	1	1			1	1	10	1		2									
3	1386	1	1	1	1	0	0	0	1	0	1	1	0	6	1		2		Hi & L	ow UIS	cores	Per Audit	Sum			
4	223	0	0	0	0	0	0	0	0				0	0	0		0									
5 6	223 223	0	0	0	0	0	0	0	0				0	1 0	0		0	AUDIT	-	Bottom	1	AUDIT	CUM	CUM	Chi-	-
7	223	10	0	0	0	0	0	0	0				0	1	0	+	0	SUM	Top 2%	50%		SUM GE	-	Bot. 50%	Square	
8	2055	1	1	0	1	1	0	0	0	1	0	1	1	6	1		2			76.010.000.00						
9	223	0	0	0	1	0	0	1	0			1	0	5	0		0	11	2	0		11	2	0	2.083	
0 1	2183 1478	1	1	0	0	0	0	0	0			1	0	5 6	0 1		1 2	10 9	2	0		10	4	0	4.348 4.348	
2	1707	1	1	1	1	1	1	1	1	0	1	1	1	10	1		2	8	2	0		8	6	0	6.818	
3	223	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	7	0	0		7	6	0	6.818	
4	1385	1	1	0	0			1		1				5	0		1	6	6	0		6	12	0	15.789	<= G
5 6	1707 223	1	0	0	0			0		0		1 0	0	4 0	0	-	0	5 4	3	1 0		5	15 16	1 1	18.015 20.053	
7	1707	1	0	0	0			0				0		3	0		1	3	3	0		3	19	1	27.000	
8	1603	1	0	0	0	0	0	0	0	1	0	1	0	2	0		1	2	3	1		2	22	2	32.051	
9	223	0	0	0	0				0			0		0	0		0	1	2	7		1	24	9	20.053	
0	1611	1	0	1	1	1	0	0	1	1	0	1	0	<u>6</u>	1		2	0	1 1	16		0	25	25	N/A	16
ES UN	& (Top	2%)	14	14	9	13	7	11	12	18	3 10	19	5	11.82												1
S UI T											2 11			13.09												

mei	portec	me	om	e 5	tuc	ıy	(F	1110	ase		1												Activity (T	V. 100 (100 (100 (100 (100 (100 (100 (100	
ctivity	/ Code:	533																		<u>C</u>	lassific	cation	By Maj	ority Au	<u>ıdit Sun</u>	<u>15 GE 6</u>	
		(A)							Be E				0)		(B)		(A) + (B)	T 200					۸ا				
Seq	UI	TOP	For	Jnre	роп	_			? (1 R	-	:5)	(U=N	0)	AUDI	Audit St 1 = GE			6" was Top 2% " was Bot. 50%					Audit S	sum			
# #		2%	1	2	3				Z		3 9	1	0 11		A STATE OF THE STA		1 = Misc				UI-DIF S	CORES	GE 6	LE 5	TOTAL		
1	2272	1	1	0	1	1	0	1	1	Πo	- 11-	- 1			0	T	1				Top 2%		10	15	25		
2	380	Ó	0	0	Ö	0	0	0	0						0		Ö				TOP Z 70		1	13	2.5		
3	380	0	0	0	0	0	0	0							0		0				Bottom 5	50%	0	25	25		
5	1777 1693	1	0	1	0	0	0	1			\rightarrow		\rightarrow		0	++-	1 1				TOTAL		10	40	50		
3	352	Ó	0	0	0	0	0	0							0		Ö				TOTAL		10		30		
,	352	0	0	0	0	0	0	0	0	C					0		0										
)	1742 1824	1	0	1	1	0	0	0		1 1	0		0	the second second	1		2 2		1 H · C	iv or more C	locaifiara r	oonondin	ng "YES" (to	ovemine e	roturn for un	roported inc	omo)
0	1782	1	1	1	1	0	0	1		1 1			0		0		1			ere independ				examine a	return for uni	reported inc	orne)
1	1895	1	1	o	1	1	0	1	0					4	0		1		1			1	11				
2	352	0	0	0	0	0	0	0					\rightarrow		0		0						ng "YES" (to	examine a	return for un	reported inc	come)
3 4	1824 380	0	0	0	0	0	0	1		0		1 0	_		1 0	++-	2		We	ere associat	ed with Hig	gh or Low	/ UI Scores.				-
5	380	0	1	0	0	0	1	0		+					0		0		3. Rando	om chance.	⊥ no greater	than 5%	, requires a c	⊥ :hi-square v	alue of 3.84°	1 or less.	
6	1769	1	0	1	0	0	0	0	0	+		1	0	2	0		1				_						
7	352	0	0	0	0	0	0	0							0		0		4. Criteri	ion: Reject	Но (Ассер	t Ha) at	5% if chi-squ	are > 3.841	2		
9	380 2085	1	0	0	0	0	0	0		1) (1	0 1	9	0	+	2					Compu	tation of Ch	i-Sauare			
0	1741	1	0	0	0	Ö	0	1		110	0	1	Ö	-	Ö		1					Compa	tution of cir	1-5quare			
1	1663	1	0	1	0	0	0	1				\rightarrow			0		1				Observed						
3	1780	0	0	0	0	0	0	0							0	1	0				(0)	(E)	(O-E)	(O-E) ²	(O-E) ² /E		-
l l	352 1781	1	0	0	0	0	0	0							0		1		"YES" U	 & Top 2%	10	5	5	25	5.000		
5	380	Ó	0	Ö	0	0	0	0		+					0		Ö			& Bottom 5		5	-5	25	5.000		
6	380	0	0	0	0	0	0	0		+				4	0		0			% Top 2%	15	20	-5	25	1.250		
7 8	1832 1808	1	1	1	1	0	0	0		0			0	-	0	-	1 2		"NO" UI 8	& Bottom 50	25	20	5	25	1.250		
9	378		0	0	0	0	0	0							0	++-	0						С	hi-Square:	12.500		
0	380	0	0	0	0	0	0	0	0					1	0		0										
1	380	0	0	0	0	0	0	0							0		0										
3	352 380	0	1 0	0	0	0	0	0		+					0		0			Hi &	l ow HIS	Scores	Per Audit	Sum			
1	1701	1	0	1	0	0	0	0							0		1			111.00	LOW OIL	500103	I CI Addit	<u>ouiii</u>			
5	1914	1	1	1	0	0	0	0	0	+				4	0		1										
6	352	0	0	0	0	0	0	0		+) 0) (\rightarrow		0		0		AUDIT		Bottom		AUDIT	CUM	CUM	Chi-	
7 B	1697 380	0	1	0	0	0	0	0			1 0	1 0	1 0		1 0	+	2		SUM	<u>Top 2%</u>	<u>50%</u>	1	SUM GE	<u>Top 2%</u>	Bot. 50%	<u>Square</u>	
)	1765	1	0	1	0	1	0	1		0					1		2		11	0	0	1	11	0	0	N/A	
)	352	0	1	0	0	0	0	0	0	0) (0	1	0		0		10	0	0		10	0	0	N/A	
1	352	1	0	0	0	0	0	0							0		0 1		9	5	0		9 8	1	0	1.020	
3	1689 380	0	0	0	0	0	0	0						-	0		0		7	1 5	0	-	7	6 7	0	6.818 8.140	
ı	1896	1			-	-						_	0		0		1		6	3	0	1	6	10	0		<= G
5	2329	1	1						1						1		2		5	1	0		5	11	0	14.103	
	1924	1	1		0				1		1			7	1 1		2		3	6	0	1	3	17	0	25.758	
7	1699 352	0	1				0	1 0			1 1			10000	0		0		2	5	1		2	19 24	2	27.000 38.782	
9	352	0	0					0	0	0) () (0	0	0		0		1	1	5		1	25	7	28.125	
0	380	0	0	0	0	0	0	0	0	10) () (0	0	0		0		0	0	18		0	25	25	N/A	
EQ LIN	& (Top 2	1000	10	17	7	8	1	1.4	1 11	0	1 1	0 2	0 8	10.9							1						
5 UI T		. 70)		17									08														
	& (Botton tal	n 50%)											5 25 0 42														-

nre	rporte	<u>d In</u>	con	<u>ne</u>	Stu	dy		(PI	na	se	1)	4										No. 100	ctivity C		and the same of	U.A.V.O.P	-
ctivit	v Code:	53	4																	С	lassific	ation	By Majo	ority Au	<u>ıdit Sum</u>	is GE 6	
		(A)			rould											(B)		+ (B)									
		TOD		Un	геро					-	-	S) (0=N	0)	ALIDIT	Audit Sum		"GE 6" was Top 2%				-	Audit S	<u>sum</u>			-
eq #	UI Score	TOP 2%		1	2 3		LAS					a	10	11	AUDIT SUM	1 = GE 6 0 = LE 5		"LE 5" was Bot. 50% Misclassified		-	UI-DIF SC	ODES	GE 6	LE 5	TOTAL		
									2		<u> </u>											UKLS					
1	1507 1374	1	1 0						0	ö	0	0		0	1	0					Top 2%		7	18	25		
3	1534	1	1						ō	ō	1			++	3	0					Bottom 5	0%	0	25	25		
	1535	1	1		1			1	1	0	1	0		0	7	1		2									
	401 375	0	1 0) 0				0	0	0				1 0	0)		-	TOTAL	-	7	43	50		-
-	1423	1	0		1 0					0	0			10	1	0											
	375	0	0	0	0	C) (0	0	0		O		0	0											
	375	0	1						0	0	0				1	0)					g "YES" (to e	examine a i	eturn for uni	eported inc	ome)
1	375 1424	0	0						0	0	0	0		0	0 4	0)	we	re independ	ent of High	or Low U	JI Scores.				
2	375	ò	6		1 6					8	- 6				0	0)	2. H _s : Si	x or more C	lassifiers r	 espondin	g "YES" (to	examine a	return for un	reported ind	come)
	375	0	0	C				5	0	0	0				0	0)		re associate							
1	395	0	0] [0	0	0		+	++	0	0)									
5	395 375	0	0						0	0	0	0			0 2	0)	3. Rando	m chance, r	no greater f	than 5%,	requires a c	hi-square v	alue of 3.841	or less.	
,	1499	1	0		0					0	1	10			1	0			4 Criterio	nn: Reject I	lo (Accent	Ha) at 5	∬ i% if chi-squa	ere > 3.841			
3	1407	1	1	1	1	Ī		1	1	ō	1	ō		ō	7	1		2	1. 0.11011	7,0,000		1111) 311 0					
)	1379	1	0		0				0	0	1	0		0	2	0						Comput	ation of Chi	-Square			
	375 375	0	0						0	0	0		++-	++	0 1	0)		-	Observed	Evacate	- 4				-
	375	0	0						0	ö					0	0)		1	Observed (O)	Expecte (E)	(O-E)	(O-E) ²	(O-E) ² /E		-
7	375	ō	ō					5	0	ō	ō		+-+		0	0)			10/	1-/-/	10.27	(/	(0 -/		
	401	0	1						0	0	1	0			2	0)		& Top 2%	7	3.5	3.5	12.25	3.500		
	375	0	0						0	0	. 0				0	0)		& Bottom 50		3.5	-3.5	12.25	3.500		
-	1440 395	1	0 1						0	0	0		+		2 3	0)	"NO" UI 8	، 10p 2% ، Bottom 50°	18 25	21.5	-3.5 3.5	12.25 12.25	0.570 0.570		
	417	ō	1						1	ō	ō	Ιō	1	lö	3	0		j i	110 010	E DOLLOIN SO	20	21.0					
)	1470	1	1							0	0		0		1	0							CI	ni-Square:	8.140		
)	1486	1	1		0				1	1	0	++-	10	++	5	0											-
!	401 1402	0	0						0	0	0	0	1 1	0	0 2	0)		-		-					-
	1519	1	Ö							ŏ	Ö			10	2	0				Hi & L	ow UI S	cores	Per Audit	Sum			
25 200	295	0	0		0	C) (0	0	1	0	0	0	1	0)									
	1363	1	1		0				1	0	1	1	1	0	7	1		2								2	
-	1688 1554	1	1		1 1	1			1	1	0	1 0	1 1	1 1	9	1 1		2	AUDIT	<u>Top 2%</u>	Bottom 50%		AUDIT SUM GE	CUM Top 2%	CUM Bot. 50%	Chi- <u>Square</u>	-
	397	0	0		1 0	Hċ			0	0	0		10		0	0)	30W	100 2 70	<u>JU /0</u>		SOM GE	10p 2 /0	<u>201. 30 /6</u>	<u>oquale</u>	1
	1419	1	0	0	1	1		5	1	0	0	1	Ō		4	0			11	0	0		11	0	0	N/A	
	375	0	0						0	0	0	++-		++	1	0		j j	10	0	0		10	0	0	N/A	
	1649 1542	1	1 0		0				0	0	0	0		0	3	0			9	2 0	0		9 8	2	0	2.083 2.083	
	1362	1	1			+-+			0	ö	1	+-+		++	5	0			7	4	0		7	6	0	6.818	
	375	Ö	0	C	0	C			0	0	0	0	0	0	0	0			6	1	ő		6	7	Ö	8.140	<= G
	420	0	0		0										2	0			5	2	0		5	9	0	10.976	
	379 1376	1	1) 0										1 1	0)	3	2	2	-	3	13 15	2	17.568 15.062	-
	1406	1	1	11	1	1	11	;	1	H	- 0	110	1	1	7	1		2	2	5	3		2	20	5	18.000	
-	1436	1	1		1				1	Ó	1	1	1	1	9	i			1	5	6		1	25	11	19.444	
	1397	1	1	0	0) [1	0	0	0	0	0	0	2	0			0	0	14		0	25	25	N/A	
0.11	N 0 /Tan	20/1	40	1	2 0	-			11	2	40		40	2	0												
) & (Top: Total	∠70)			3 8 4 8				11		13	4		3	9 10.64		-			-		+					-
				1	113	Ħ	#	1	-	-	1.0		11		, , , , ,												
1.10	& (Bottor	~ E09	W) 10	1 2	4 25	2	4 2	2	23	25	20	1 25	12/	25	23.36												

Jnrer	portec	mee	m	9 51	ua	У	(P	ma	ise	1)							15					Activity C			V-100 Mar 1 Mar 1 1	
ctivity	Code:	535																	<u>C</u>	lassific	ation	By Majo	ority Au	<u>ıdit Sum</u>	is GE 6	
		(A)		Shou											(B)	(A)										
			or l	Jnrep	- 11				-	-	S) (0)=N(9)		Audit Sum		'GE 6" was Top 2%					Audit S	<u>Sum</u>			
Seq #		TOP 2%	1	2					R		9	10	111	AUDIT SUM	1 = GE 6 0 = LE 5		'LE 5" was Bot. 50% Misclassified			UI-DIF SC	ODES	GE 6	LE 5	TOTAL		
			1	4	4	4	2	4	1	1	1	1 4			1				1		JONES	25	0	25		
2	963 427	0	1	1	1	1	1	1	1	1	1	6	0	10 9	1	1				Top 2%		23	U	23		
3	460	0	1	1	1	1	Ö	1	1	1	1			8	i	1				Bottom 5	0%	18	7	25		
4	456	0	1	1	1	1	1	1	1	1	1	0	1	10	1	1				TOT#1		40				
5 6	1036 456	0	1	1	0	1	1	0	1	1	1	0	10	11 7	1 1	1				TOTAL		43	7	50		
7	379	0	Ö	1	1	1	Ö	ō	1	1	Ö	Ö		5	0	Ö										
8	963	1	1	1	1	1	1	1		1	1	1	1	11	1	2										
9	491	0	1	1	1	0	1	1	1	1	1	1	0	9	1 1	1						g "YES" (to e	examine a r	return for uni	eported inc	ome)
10 11	924 919	1	1	1	1	1	1	1	1	1	1	1	1	10 11	1 1	2		We	ere independ	ent of High	or Low (UI Scores.				
12	872	1	1	1	1	1	1	1	1	1	1	1	1	11	1	2		2. H _a : S	ix or more C	lassifiers r	espondin	ng "YES" (to	examine a	return for un	reported inc	ome)
13	485	0	1	1	1	1	0	1	1	1	0	0	-	8	1	1			ere associate							
14	449	0	0	0	1	0	0	1	1	0	0	0		3	0	0		0. 0. 1							YOURS END AND	
15 16	1019 460	1 0	1	6	1	0	1	1		1	16	1	0	9	1 1	1		3. Rando	om cnance, r	no greater i	tnan 5%,	, requires a c	ni-square v	alue of 3.64 i	or less.	
17	957	1	1	1	1	1	1	1	1	1	1	1	1	11	i	2		4. Criteri	on: Reject I	lo (Accept	Ha) at 5	5% if chi-squa	are > 3.841			
18	963	1	1	1	1	1	1	1	1	1	1	1	1	11	1	2				` '						
19	886	1	1	1	1	1	1	1	1	1	1	1	1	11	1	2					Comput	tation of Chi	-Square			
20 21	998 886	1	1	1	1	1	1	1	1	1	1	1	1 1	11	1 1	2			-	Observed	Evnect	od				
22	427	0	1	1	1	ò	ò	1	1	1	110	Ó	liöl	6	1	1				(O)	(E)	(O-E)	(O-E) ²	(O-E) ² /E		
23	427	0	1	1	1	1	1	1		1	1	0	0	9	1	1										
24	948	1	1	1	1	1	1	1	1	1	1	1	1	11	1	2			& Top 2%	25	21.5	3.5	12.25	0.570		
25 26	427 460	0	1	0	0	0	0	0	1	1	0	0	0	3 11	0 1	0 1		"YES" UI	& Bottom 50	18 0	21.5 3.5	-3.5 -3.5	12.25 12.25	0.570 3.500		
27	460	Ö	1	1	1	1	1	1	1	1	1	1	1161	10	1	1			& Bottom 50°		3.5	3.5	12.25	3.500		
28	466	0	0	0		0	0	1	1	1	1	1	0	5	0	0							5-350			
29	460	0	1	1	1	1	1	1	1	1	1	0	0	9	1	1					-	CI	ni-Square:	8.140		
30 31	886 932	1	1	1	1	1	1	1	1	1	10	1	0	10 10	1 1	2										
32	924	1	1	1	1	1	Ó	1	1	1	1	1	1	10	1	2										
33	886	1	1	1	1	1	0	1	1	1	1	1	1	10	1	2			Hi & L	ow UIS	cores	Per Audit	Sum			
34	502	0	0	0	1	1	0	1	1	1	1	0	0	6	1 1	1										
35 36	872 427	1	1	1	1	1	1	1	1	1	1	1 0	1 1	11	1 1	1		AUDIT		Bottom	7	AUDIT	CUM	CUM	Chi-	
37	439	0	6	Ö	1	0	Ö	1	0	1	6		10	3	0	Ó		SUM	Top 2%	50%		SUM GE	<u>Top 2%</u>	Bot. 50%	Square	
38	957	1	1	1	1	0	0	1	1	1	1	1	1	9	1	2										
39	851	1	1	1	1	1	1	1	1	1	1	1	1 1	11	1 1	2		11	16	1		11	16	1 2	20.053	
40 41	456 460	0	1	0	0	0	0	1	0	1	0	0		8 2	0	1		10	6 2	5 5		10	22 24	6 11	20.779 16.095	
42	934	1	1	1		1		Ö		1	ō			7	1	2		8	0	3		8	24	14	10.965	
43	930	1	1	1	-	-	1	1	1			++-	11.	11	1	2		7	1	1		7	25	15	12.500	
44	460	0	-	1	_	-	_							10	1	1		6	0	3		6	25	18	8.140	<= GE
45 46	930 427	0	1	1		1	1	1	-	1	++	++		11	1 1	1		5	0	2		5 4	25 25	20 21	5.556 4.348	
47	1009	1	1			1	_	1			1			11	1	2		3	0	3		3	25	24	1.020	
48	872	1		1		1	1	1	1		1		1	11	1	2		2	0	1		2	25	25	N/A	
49	439	0		0										4	0	0		1 1	0	0		1	25	25	N/A	
50	460	0	1	1	1		E	1	1		111	10	0	9	1	1		0	0	0	- 0	0	25	25	N/A	
/ES UN	& (Top 2	!%)	25	25	25	23	21	23	25	25	23	25	21	23.73							1					
ES UI T				42										40.09												
10 140 3) (D) ()	- 5000	7	0	_	0	4.4					40	10	0.000				-								-
OUI) 8	& (Botton	150%)											19	8.636 9.909												

Jnrer	rported Inco	me	Stu	dy	_(Pľ	nas	se	1)												ctivity (20,400,000,000,000	
ctivit	v Code: 536																	<u>c</u>	lassific	ation	By Majo	ority Au	ıdit Sum	is GE 6	
	(A)		Should											(B)	(A)										
		or U	пгеро					-	_	6) (0	=NC))		<u>Audit Sum</u>		"GE 6" was Top 2%					Audit 9	<u> Sum</u>			
Seq #	UI TOP Score 2%	1	2 2		LAS					0	10	11	AUDIT SUM	1 = GE 6 0 = LE 5		"LE 5" was Bot. 50% Misclassified			UI-DIF SC	ODEC	GE 6	LE 5	TOTAL		
																				UKES					
2	497 0 486 0	00	0 1	0				0	1	0		0	3	0	0				Top 2%		25	0	25		
3	746 1	1	1 1		C				Ö	1		ō	8	1	2				Bottom 5	0%	10	15	25		
4	753 1	1	1 1	1			1	1	1	1	1	0	9	1	2				TOTAL		0.5	45	50		
6	489 O 497 O	00	1 1				1	1	1	-	0		7	1 1	1		-		TOTAL	-	35	15	50		-
7	727 1	1	1 1	1			1	1	1	1	ō	1	9	i	2										
8	723 1	1	1 1	1	1		1	1	1	1	1	1	11	1	2		4 11 01				IIVEOU 6				
9 10	726 1 732 1	1	1 1	1	1 1		1	1	1	1	1	1	11	1 1	2			x or more C re independ			g "YES" (to d	examine a i	eturn for unr	eported inc	come)
11	748 1	0	1 1	1			1	1	1	1	1	1	9	1	2				15						
12	445 0	0	0 1	0			1	0	0	0	1	0	3	0	0						g "YES" (to	examine a	return for un	reported in	come)
13 14	470 0 479 0	1	1 1	0			1	1	0	1	1	1	8 2	0	1 0		we	re associati	ed with Hig	h or Low	UI Scores.				
15	498 0	0	0 1	1			1	1	0	0	0	0	4	0	0		3. Rando	m chance.	⊥ no greater f	⊥ than 5%.	requires a c	⊨ hi-square v	 alue of 3.841	or less.	
16	753 1	1	1 1	1			1	1	0	1	1	0	8	1	2										
17 18		0	0 0	1			0	0	0	0	1	0	10	0 1	0		4. Criterio	on: Reject I	Ho (Accept	Ha) at 5	% if chi-squ	are > 3.841			
19	753 1	1	1 1	1 1			1	1	1	1	1	0	11	1	2					Comput	ation of Ch	-Sauare			
20	730 1	1	1 1	1	1		1	1	1	1	1	1	11	1	2					¥ 8		N 80 80			
21	744 1	1	1 1	1	1 0		1	1	1	1	1	0	9	1	2				Observed			10 E)2	(O. E)2/E		
22	475 0 746 1	1	0 1	1 1	1		1	1	1	1	1	1	7	1 1	1 2			-	(O)	(E)	(O-E)	(O-E) ²	(O-E) ² /E		
24	506 0	1	1 1	To			i l	1	Ö	0	1	Ó	5	Ó	Ó		"YES" UI	& Top 2%	25	17.5	7.5	56.25	3.214		
25	802 1	1	1 1	1	1		1	1	1	1	1	1	11	1	2			& Bottom 5		17.5	-7.5	56.25	3.214		
26 27	768 1 732 1	1	1 1	1 1	1 0		1	1	0	1	1	1	10 8	1	2		"NO" UI &	. Top 2% . Bottom 50	0 15	7.5 7.5	-7.5 7.5	56.25 56.25	7.500 7.500		
28	804 1	1	1 1	1			1	1	1	1	1	0	9	1	2		140 018	Dollom 30	10	7.3	7.3	30.23	7.500		1
29			0 0							0	0		0	0	0						CI	ni-Square:	21.429		
30 31	505 0 754 1	1	0 1	1			0 1	0	0	0	0	0	10	0 1	2										
32	738 1	1	1 1	1			1	1	6	1	6		8	1	2										
33	496 0	1	0 1	0			1	1	1	0	0		6	1	1			Hi & I	Low UIS	cores	Per Audit	Sum			
34	505 0	0	0 1	1 1				0	0	1	0	0	4	0	0										
35 36	472 0 511 0	1	1 1	1			─	0	0	1	1	0	10	1	0		AUDIT	1	Bottom		AUDIT	CUM	CUM	Chi-	10
37	467 0	0	0 0	1				Ö		Ö	Ö		2	0	Ö		SUM	Top 2%	<u>50%</u>		SUM GE	Top 2%	Bot. 50%	<u>Square</u>	
38	513 0	0	1 1				1	1	1	0	1	1	7	1	1		0.4.4%	_	-		4.1			40.070	
39 40	488 O 486 O		0 0				0	1	0	0	0	0	1 6	0	0		11 10	9	2		11 10	9 15	2	10.976 15.062	
41	753 1	1	1 1	1			1	1	1	1	1	1	10	1	2		9	5	0		9	20	2	26.299	
42	761 1	1	1 1						1	1		1	11	1	2		8	5	1		8	25	3	39.286	
43 44	822 1 411 0		1 1									1	11 2	0	2		6	0	3		6	25 25	6 10	30.645 21.429	<= GE
45	790 1			1				1		1		1	10	1	2		5	0	1		5	25	11	19.444	- GE
46	824 1	1	1 1	1			1	1	1			1	10	1	2		4	0	2		4	25	13	15.789	
47	498 0 766 1	1	0 1	0		44	밁	0	0	0	0	0	1 8	0 1	2		3 2	0	2	-	3 2	25 25	15	12.500 4.348	
48	756 1	1	1 1	1 1	112	11	1	1	1	1		1	10	1	2		1	0	6		1	25 25	21 24	1.020	
50	471 0		0 1				1				Ö		6	1	1		0	Ö	1		0	25	25	N/A	
VEO 125	N 0. (T-1, 200)	24	24 2			1	22	25	200	25		40	22.40				18						8		
YES UI) 'ES UI 1			24 25 33 46										22.18 31.91												
2001	, S.M.	55	33 40	1	1			J.		31	102	20	01.01												
IO LIN	& (Bottom 50%)	16	16 4	15	5 2	4	9	13	18	19	16	18	15.27												

rer	porte	d In	com	ie S	<u>Stu</u>	dy	(F	2ha	ase	1)	2										100	ctivity (
tivit	v Code:	53	7																C	lassific	ation	By Majo	rity Au	idit Sum	ns GE 6	
		(A)							Be E				0)		(B)		+ (B)					۸اند د				
q	UI	TOP		Unr	epor				? (1 R		-5)	(U=N	0)	AUDIT	Audit Sum 1 = GE 6		"GE 6" was Top 2% "LE 5" was Bot. 50%					Audit 9	<u>um</u>			
Ч	Score	2%		2	3						3 9	1	0 11	SUM	0 = LE 5		Misclassified			UI-DIF SO	CORES	GE 6	LE 5	TOTAL		
	920	1	1	1	1	10	0	1	1	1 1	1	1	1	9	1	2				Top 2%		25	0	25		
9 80 80	326	Ö	Ö	Ö	l o	Ö	0	Ö	16	ΗĠ) (110	1 6	0	Ö	Ó			1	10p Z /6		2.3		2.5		
	380	0	1	0	0	0	0	1	1	1	C		1	6	1	1				Bottom 5	0%	3	22	25		
_	397	0	1	+	0	0	+			1	C	1	0	3	0	0										
-	980	1	1		1	1	1	-		1 1	1	4	0	10 10	1 1	2		-	-	TOTAL	1	28	22	50		-
	405	0	1	+	6	0	0	1.1		1 1	C	110	1 6	3	Ö	0										
	986	1	1		1	0	1	1		1	1		O	9	1	2										
	935	1	1	1	0	0	0			0			0	6	1	2						g "YES" (to e	examine a	eturn for uni	reported inc	ome)
	1018 328	1	1	++-	1	1	1						0	8	1 1	1		We	re independ	ent of High	or Low (JI Scores.				
	957	1	1		1	1	1	1		l d		++	11	9	1	2		2. H ₅ : S	ix or more C	lassifiers r	espondin	g "YES" (to	examine a	return for un	reported inc	come)
	966	1	1	+	1	0	0	1		to		11.	1	7	1	2			re associate							,
	396	0	1	+		0	0					1		3	0	0										
	969	1	1			0	1			0		41	0	7	1	2		3. Rando	ım chance, ı	no greater	than 5%,	requires a c	hi-square v	alue of 3.841	l or less.	
	337 282	0	1	+	+	0	0			+-) (\rightarrow	0	1	0	0		4 Critori	on: Reject I	Ha (Accen	t Ha) at 5	i% if chi-squ	oro > 3.8/1			
8	390	Ö	1		1	1	0	1		1		Hi	110	6	1	1		4. Onten	on. reject i	III (Accep	i iia) at s	770 II CIII-3qu	ale > 3.041			
	1009	1	1		1	1	1	1	1	1	1	1	1	11	1	2					Comput	ation of Chi	-Square			
	969	1	1	+-	1	1	1	1		1	1	11	1	11	1 1	2				L	12	1	J 40 40			1
_	337 351	0	0 1			0	0			4			0	2	0 0	0		-	-	Observed		ed (O-E)	(O-E) ²	(O-E) ² /E		-
-	382	0	0	+	1	0	0			115				3	0	0		1		(0)	(E)	(0-E)	(0-=)	(0-6) /6		1
	920	1	1		1	1	1	1		1	1		10	9	1	2		"YES" UI	& Top 2%	25	14	11	121	8.643		
	326	0	0		0	0	0			0) () () 0	0	0	0		"YES" UI	& Bottom 5		14	-11	121	8.643		
	394	0	1	+-+	1	0	0			0) [11.	0	5	0	0		"NO" UI 8		0	11	-11	121	11.000		
-	1014	1	1		1	0	1	1		1 0	1 1	4	1 0	11 2	0	2		"NO" UL 8	& Bottom 50	° 22	11	11	121	11.000		-
	409	0	1	+	1 1	1	0	1		Ηŏ				4	0	Ö			+			C	ni-Square:	39.286		-
	935	1	1	-	1	1	ō	1		To			1	9	1	2										
	388	0	0		1	0	0			C) () (0	1	0	0										
	986	1	1	+-+	1	1	1	1	1	1	1	1	1	11	1	2			1001			D A !!A				
	337 1064	0	1	0	0	0	0	1		0	_	110	0	10	0 1	2			HI & L	LOW UIS	cores	Per Audit	<u>sum</u>			
-	337	0	0	+-	6	0	0			1 6	-	110	1 6	0	0	0										-
	337	ō	1			ō	ō					-	Tö	2	0	Ö		AUDIT		Bottom		AUDIT	CUM	CUM	Chi-	ř.
	949	1	1		1	1	1	1	1	1	1		1	11	1	2		SUM	<u>Top 2%</u>	50%		SUM GE	<u>Top 2%</u>	Bot. 50%	Square	
-	969	1	1	+	1	0	1	1		11 1	1	11	11	10	1	2		0.44	-			44			F FFC	
-	387 920	1	1		1	0	0	1		1 1	1	419		2 8	0 1	2		11 10	5 7	0		11 10	5 12	0	5.556 15.789	
 	326	0	0	+-+	0	Ö	0	Ö		Ηċ) (110		0	Ö	0		9	7	0		9	19	0	30.645	
	1026	1	1	1	1	0	0	1	1	0	1		1	8	1	2		8	3	ō		8	22	ō	39.286	
	368	0	1	0	0	0			0	0) () (1	0	0		7	2	0		7	24	0	46.154	
-	1064	1	1	1 1	1	0	1	1	1 1	110	1 1	11	1	9	1	2		6	1 1	3		5	25 25	3	39.286	<= (
	931	1											0	9	0 1	2		5	0	3	1	4	25 25	7	36.207 28.125	
	405	0	1	10	6	0	0	1	1 6	110) [110	0	2	0	0		3	0	4		3	25	11	19.444	
	984	1	1	1	1	1	1	1	1	0	1		1	10	1	2		2	Ō	6		2	25	17	9.524	
	1026	1											1	10	1	2		1	0	4		1	25	21	4.348	
15 5030	938	1	1	1	1	1	1	1	1 1	110	1 1	1	1	<u>10</u>	1	2		0	0	4		0	25	25	N/A	
STID	& (Top:	2%1	25	25	24	12	19	25	32	1	4 2	5 2	5 17	21.09												-
	, ∝ (τορ. Total	2 70)											3 19	26.82												
T																										
	& (Bottor			1	1 4 -		17	1140	ALI DO	1 4 4		4 4	7 100	19.27												

nre	rpo	rte	d In	con	1e	Stu	dy	′	(P	ha	se	1)												E	ctivity (code 50	38		
ctivit	tv Co	ode:	53	8																		<u>c</u>	lassific	ation	By Maj	ority Au	ıdit Sum	is GE 6	
			(A)	For		ould									0)		(B) Audit Sur		(A) + (B) 2 = "GE 6"	was Top 2%					Audit 9	Sum			
eq	T (JI	TOP			T					R		Ú		Í	AUDI		_		vas Bot. 50%									
#	Sc	ore	2%	1	2	3	1	4	5	6	<u>Z</u>	8	9	1 1	0 11	SUN	1 0=LE5		1 = Miscla	<u>ssified</u>			UI-DIF S	CORES	GE 6	LE 5	TOTAL		
		58	1	1	1	0		1	1	1	1	1	1	1	1	10	1		2				Top 2%		19	6	25		
2		06 41	1	1 0		0		1	0	1	0	1	1	1	0	9	1 0		0				Bottom 5	0.0%	6	19	25		
-		91	1	1					1	1	1	0		1	0	7	1		2				Dottoin 3	70	- 0	13	23		1
	71	69	1	0	1	0	0		0		0		1	1	0	4	0		1				TOTAL		25	25	50		
-		10	0	0 1		0			0	1	1	1	1) (0	5 9	0		0										
		73 46	1	1		0		+	1	1	1	1	1 1	1	10	9	1		2										
		77	0	0	1					Ö	1	1	Ċ) (4	Ö		Ō		1. H _o : Six	or more C	lassifiers r	espondin	"YES" (to	examine a i	eturn for uni	eported inc	ome)
)		02	0	0	C						0			1	0	2	0		0		we	re independ	lent of High	or Low (JI Scores.				
2		91 63	1	0 1		0	+1-1		0	1	1	1		1 0	0	5 9	0		2		2 H. Si	v or more (laccifiare	reenondin	g "YES" (to	ovamino a	return for un	renorted in	come)
		90	1	1		10	11		o I	1	Ö	Ö		1	lo	6	1		2			re associat				oxummo u	lotain ioi an	ropolica iii	
1	- 61	87	1	1					1	1	1	1		1	1	11	1		2										
5		37 24	0	0	1	0			0	1	0	1	1 0) [0		2	0		0		3. Rando	m chance,	no greater	than 5%,	requires a c	hi-square v	alue of 3.841	or less.	
		10	1	1		0			1	1	1	1	11	1	0	8	1		2		4. Criterio	n: Reject	Ho (Accep	t Ha) at 5	i% if chi-squ	are > 3.841			
	4:	37	0	0	C	0	0)	0	0	0	0) (0	0	0		0				, , , , , , , , , , , , , , , , , , ,						
<u> </u>		58	1	1		→.			1	1	1	0		1	10	8	1		2					Comput	ation of Ch	-Square			
1		64 08	0	0	1	0			0	1	0	0				3	0	-	0				Observed	Evnect	ad				-
		22	ŏ	0	110					ò	0	1.1		_	1 0	0	0		0				(O)	(E)	(O-E)	(O-E) ²	(O-E) ² /E		
		49	0	1	1				1	1	1	1		C	0	8	1		1				-		, ,				
		61 05	1	1					1	1	0			1	0	8	1		2			& Top 2%	19	12.5	6.5	42.25	3.380		
		05 15	0	1		0		1	0	1	1	1	1 1	1	1	7 10	1 1		2		"NO" UI &	& Bottom 5 Ton 2%	6 6	12.5 12.5	-6.5 -6.5	42.25 42.25	3.380 3.380		-
	3.	47	0	0	110	0			o	Ö	Ö	Ö		0	0	0	Ö		ō			Bottom 50		12.5	6.5	42.25	3.380		
		79	0	0	C					0	1	0			0	3	0		0										
)		94 08	0	0						0	0) (0	3	0	-	0			1		-	C	ni-Square:	13.520		-
1		91	Ö	0	1	10			0	1	1	1	1 6) (\rightarrow	4	0		0										
	6	69	1	0	1	0	1		0	1	0	0		1	0	5	0		1				1						
		66	0	0		0			1	1	1	1		0		7	1		1			Hi &	Low UIS	Scores	Per Audit	<u>Sum</u>			
		31 74	0	1		0			1	0	1	1	+1-1	1	0	7	1 1		1										
		71	ō	Ö						Ò	1	Ó	Tic	0 0	10	1	0		Ö		AUDIT		Bottom		AUDIT	CUM	CUM	Chi-	ľ
		88	1	1		0			0	1	1	1	1	C	1	8	1		2		SUM	<u>Top 2%</u>	<u>50%</u>		SUM GE	<u>Top 2%</u>	Bot. 50%	Square	
		10 29	0	1 0						0	0	1				2	0		0		11	2	0		11	2	0	2.083	
		02	1	1					1	1	1	1	11	1 1	0	8	1		2		10	2	0		10	4	0	4.348	
	3:	96	0	1	1	0	1	1	1	1	1	1	1	1	0	9	1		1		9	4	2		9	8	2	4.500	
		79 76	0	0 1	1					0	0	1			0	6	0		2		8 7	7 2	3		8 7	15 17	3 6	12.500	
		76 47	1			110									1	8	1		2		6	2	0		6	17	6	9.742 13.520	<= (
	3.	41	ò			0	0	1	0	1	0	1	C	1	Ö	3	0		0		5	3	1		5	22	7	18.473	
		46	1	1			1				1				1	11	1		2		4	2	3		4	24	10	18.015	
		66 74	1		1										0	8 5	0		1		3 2	0	3	1	3 2	24 24	14 17	10.965 6.640	
		74	1												1	7	1		2		1	0	3		1	24	20	3.030	
)		69	1												Ó	<u>0</u>	Ó		1		0	1	5		Ô	25	25	N/A	
0.10	D C	σ.	20/3	-		4 -			1.5	22	47	40				40.0													
	l) & (Total		∠%)												D 7 9 9	16.64 24.38		-				-	-	+					-
Ť	Total						1	1		-			۳	1		24.00													
THE	& (F	Bottor	n 50%	6) 19	1	4 25	1	6 3			13 21				6 23	17.27 25.64													

<u> rer</u>	porte	<u>d In</u>	com	ie S	stu	dy	(F	h	ase	: 1)	4	-										10000	Activity (Continuous C		
tivity	/ Code	: 53	9																	<u>CI</u>	assific	ation	By Maj	ority Au	ıdit Sun	ns GE 6	
		(A)							Be E						(B)		(A) + (B)										
	2.11	TOD	For	Unr	por				? (1		S) (0=N))	ALIDE	Audit 9	_	2 = "GE 6" was Top :		_			-	<u>Audit</u>	<u>sum</u>			
q	UI Score	TOP 2%	1	2	3				R		9	10	11	AUDI SUN			0 = "LE 5" was Bot. s 1 = Misclassified	DU%			UI-DIF SC	ORES	GE 6	LE 5	TOTAL		
	1009	1	1		0	0	0					1 1	10	3	0		1		- 7		Top 2%	- CITES	19	6	25		
	1045	1	1	1.1	0	ō	1	1				1	Ö	6	1		2		-		10p Z /0		13		23		
	1064	1	1	0	0	0	1							6	1		2				Bottom 5	0%	5	20	25		
	575 573	0	0			0	0	1						3	0		0		_		TOTAL	-	24	26	50		
-	571	ö	0			0	0						10	4	0		0				TOTAL	1	24	20	30		
	535	0	0	0	0	0	0	0	0	0			0	0	0		0										
	619	0	0			1	1							7	1		1						********				
)	1044 481	1	1		0		0						0	1	0		0			or more Cla e independe			g "YES" (to	examine a	return for un	reported inc	ome)
1	611	Ö	1		1	1	1					1	1	11	1		1		wen	e maepenae	ant or ringn	OI LOW	or acures.				
2	510	0	1	0	0	1	0	1	1			1	0	6	1		1						ng "YES" (to	examine a	return for ur	reported in	come)
3	1003	1	1		0	0	1				\rightarrow	1	0	7	1		2		wer	e associate	d with Hig	h or Low	UI Scores.				
5	582 1024	1	0 1			1	1				\rightarrow	0	0	6 8	1 1		1 2	3 Par	don	n chance n	n arester 1	han 5%	, requires a c	hi.emuara v	alue of 3.84°	1 orlace	
3	504	Ó	Ö			0	O				\rightarrow	lò		1	Ö		0	3. 1tal	10011	in chance, ii	o greater i	illaii 570	, requires a c	iii oquale v	aide 0i 3.04	1 01 1033.	
7	594	0	0		0	0	0	0					0	3	0		0	4. Crit	erio	n: Reject H	lo (Accept	Ha) at 6	5% if chi-squ	are > 3.841			
)	503 607	0	0		0	0	1						0	1 3	0		0					C	4-4'£ CL				
)	1057	1	0			0	1						0	7	1		2		-			Compu	tation of Ch	<u>ı-Square</u>			
	593	Ö	1			0	Ö						Ö	5	Ö		0				Observed	Expect	ed				
2	594	0	0		0	0	0			0	0			1	0		0				(O)	(E)	(O-E)	(O-E) ²	(O-E) ² /E		
	1049	1	0	1		0	1				0		0	6	1		2	"VEO"	111.0	T 20/	40	40	-	40	4.000		
5	477 556	0	0		0	1	0							2	0		0			& Top 2% & Bottom 50	19 5	12 12	-7	49 49	4.083 4.083		
	539	Ö	ō		ō	0	0						+	0	0		Ö			Top 2%	6	13	-7	49	3.769		
7	1009	1	1		0	0	1						0	4	0		1	"NO" L	JI &	Bottom 50°	20	13	7	49	3.769		
3	528 548	0	0 1			1	0			1		1 1	0	6	0		0					-		hi-Square:	15.705		
,	520	6	0			0	0	0				1 0		0	0		0		-			1		ni-square:	10.700		
	994	1	0			Ō	Ō						ō	4	0		1										
2	603	0	0			1	0							2	0		0			10.01			D A 114				
	618 1094	0	1	+	0	0	0	1					0	4 5	0		0 1		_	HI & L	ow UI S	cores	Per Audit	Sum			
	999	1	1		0	0	1	-					0	6	1		2					-					
	1058	1	1		0	Ō	1	1					1	7	1		2	AUD	T		Bottom	1	AUDIT	CUM	CUM	Chi-	
	1016	1	1		0	0	1	1			1	1	1	9	1		2	SUN	1	<u>Top 2%</u>	<u>50%</u>		SUM GE	<u>Top 2%</u>	Bot. 50%	<u>Square</u>	
1	1044	1	1		0	0	1				1 1	1 1	0	6 8	1		2 2	11		0	1		11	0	1	N/A	
	1023	1	1		0	o	1				\rightarrow	1	0	8	1		2	10	_	0	0		10	0	1	N/A	
	1023	1	1	1	0	1	1	1	1	1			0	9	1		2	9		3	0		9	3	1	1.087	
	1002	1	1								1			7	1		2	8		4	0		8	7	1	5.357	
	485 1012	1	1				0		10	10				1 4	0		0 1	6		5 7	3		6	12 19	2 5	9.921 15.705	<= G
	551	Ö		0	0	0	0	1	0	1	0	0		2	0		Ö	5		1	1		5	20	6	15.705	
	1013	1	1	0	0	0	0	1	1	1	1	1	0	6	1		2	4	į.	4	3		4	24	9	20.053	
	996	1	1				0				1		0	6 9	1		2	3 2		1	4		3 2	25	13	15.789	
1	1051 1045	1	1		0		1				\rightarrow		0	8	1		2 2	1		0	3 5		1	25 25	16 21	10.976 4.348	
	1128	1	1				1			++-	\rightarrow		0	Z	1		2	Ö		0	4		0	25	25	N/A	
								1					2 8					1					10				
	& (Top	2%)			1				20					14.55								-					
SULT	utai		21	21	2	11	22	40	32	2.	2 23) J	3	21.45					-								
LUN	& (Botto	EO	43 20	10	24	17	21	0	12	1 1	7 20	1 10	24	18.09								1					

Appendix D

Optimal Audit Sums

<u>Jnre</u>	rerported Income Study (Phase 1)																	T	ctivity C								
ctivit	v Code:	53	2																j.		Class	ificati	on By C	ptimal	Audit S	<u>ums</u>	
		(A)			ould											(B)		+ (B)									
D a sa	330	TOP		Unr	epor	-					ES)	(0=	NO		0 LIDIT	Audit Sum		"GE 2" was Top 2% "LE 1" was Bot. 50%				-	Audit S	<u>sum</u>			-
Seq #		2%		2	3				ER.		8	9	10	11	AUDIT	1 = GE 2 0 = LE 1		Misclassified			UI-DIF SC	ORES	GE 2	LE 1	TOTAL		
1	1869	1	1	-	1 4	1	1	-	1 1		4	4	4	1	11	1	2				Top 2%	-	22	3	25		
2	1635	1	0	++-	0	o				#	0	0	0	0	0	0	1				1 Op 2 /0		22	3	23		
3	1365	1	1	++-	1	1	1	1	1 1		1	1	1	1	11	1	2				Bottom 5	0%	2	23	25		
5	223	0	0			0					0	0	0	0	0	0	0				TOTAL		24	20	50		
6	223	0	0		++	0) (0	0	0	0	0	0	Ö			1	TOTAL	1	24	26	30		-
7	223	Ō	0			0) (1	0	0	0	1	0	Ö										
8	223	0	0			0) (1	0	0	0	1	0	0						W/EOU 6				
9 10	223 1707	0	0		0	1) (4	0	0	0	0	0 8	0 1	2			∕o or more ∪ re independ			g "YES" (to	examine a	return for un	ireported in	come)
11	223	0	0			0				+	0	0	0	0	0	Ö			we	ie iliuepeliu	ent or ringin	OI LOW C	Ji Scoles.				
12	1707	1	0	1	+	1	0) 1		0	0	0	0	3	1	2						ng "YES" (to	examine a	return for u	nreported in	icome)
13	1385	1	1		0	1	0) (1	0	1	0	5	1	2		we	re associate	ed with Higl	h or Low	UI Scores.				
14 15	1385 1707	1	1		0	0	0		1 0		0	0	0	0	6 2	1 1	2		3 Dando	m chance	no areater t	han 5%	requires a c	hi. cauara v	alua of 3.841	l orlace	1
16	223	Ó	0		+	0					1	0	0	0	2	1	1		J. Italiuo	in chance, i	ilo greater t	ilali 570,	requires a c	iii-squaic v	alue 01 3.04	01 1655.	
17	1386	1	1	+	0	0) 1		1	0	0	0	3	1	2		4. Criterio	on: Reject I	Ho (Accept	Ha) at 5	% if chi-squ	are > 3.841			
18	1386	1	1		1	1	0		1 1		1	0	1	0	8	1	2										
19 20	1707 223	1	0		0	0					0	0	0	0	1 0	0	1					Comput	ation of Chi	-Square			1
21	223	ō	0			0				⊣ ⊢	0	0	0	0	0	0	Ö				Observed	Expecte	ed				
22	223	0	0			1) (0	0	0	0	1	0	0				(O)	(E)	(O-E)	(O-E) ²	(O-E) ² /E		1
23	223	0	0		++	0					0	0	0	0	1	0	0		W/EOUTH	0 T 20/	22	40	40	100	0.000		
24 25	1732 1603	1	0			0) (0	0	1	0	1 2	1	1 2			& Top 2% & Bottom 5	22	12 12	-10	100 100	8.333 8.333		
26	223	Ö	0		+	0					0	0	o	0	0	Ö	Ô		"NO" UI 8		3	13	-10	100	7.692		
27	1676	1	0		+	0	1	1			1	1	1	0	6	1	2		"NO" UI 8	Bottom 50	23	13	10	100	7.692		
28	223	0	0			0					9	0	0	0	0	0	0						CI	l Causes	32.051		
30	223	0	0			0					0	0	0	0	0	0	0			+			- CI	n-square.	32.031		-
31	223	ō	1			0					0	0	0	0	1	0	Ö										
32	1707	1	1		0	1			1 1		1	1	1	1	10	1	2										
33	1386	1	1	+	+-	0) 1		0	1	1	0	6	1 0	2			HI & L	Low UI Scores Per Audit Sum						
34 35	223	0	0			0			0 0		0	0	0	0	1	0	0										
36	223	ō	0	+-+	+	ō					ö	0	0	0	Ö	0	Ö		AUDIT		Bottom		AUDIT	CUM	CUM	Chi-	
37	223	0	0		++	0) (1	0	0	0	1	0	0		SUM	<u>Top 2%</u>	50%		SUM GE	<u>Top 2%</u>	Bot. 50%	Square	
38	2055	1	1 0			0) (1	0	1	0	6 5	1 1	1		11	2	0	-	11	2	0	2.083	
40	2183	1	1		1	0) (1	0	1	0	5	1	2		10	2	0		10	4	0	4.348	
41	1478	1	1	0		1	0	1	1 1		1	0	1	0	6	1	2		9	0	0		9	4	0	4.348	
42	1707	1	1		1	1			1 1	–ı.⊢	0	1	1	1	10	1	2		8	2	0		8	6	0	6.818	
43	223 1385	0	0	++	0	0				-+-+		0	0	0	5	1	2		6	6	0		6	6 12	0	6.818 15.789	
45	1707	1	0		0									0	4	1	2		5	3	1		5	15	1	18.015	
46	223	0		0	0	0	0) (0	0	0		0	0	0		4	1	0		4	16	1	20.053	
47	1707	1	0		0							0		0	3	1	2		3	3	0	1	3	19	1	27.000	J- 840
48	1603 223	1	0		0		0					0		0	2	0	2		2	3 2	7	1	2	22 24	2 9	32.051 20.053	<= MA
50	1611	1	0		+-+	1			1			0	1	0	6	1	2		0	1	16		0	25	25	N/A	
																											1 6
YES UI 'ES UI) & (Top 2	2%)			9										11.82 13.09												
ES UI	TOTAL		15	14	12	12	+	11	2 1	4	22	11	20	3	13.09												
	& (Bottor			11		11-		- 1		_				11	23.73					_	-	-			-		1

Inrerp	ortec	ling	com	e S	tuc	y	(F	ha	ase	1)											<u></u>	ctivity (Code 5	33		
ctivity	Code:	533	3																	Class	ificati	on By C	ptimal	Audit S	<u>ums</u>	
		(A)									mine				(B)	(A)	+ (B)									
			For	Unre	port						S) (0=N	0)		<u>Audit Sum</u>		"GE 2" was Top 2%					Audit 9	<u> Sum</u>			
Geq #		TOP 2%	1	2	2	-	ASS 5		R		0	10	11	AUDIT SUM	1 = GE 2 0 = LE 1		"LE 1" was Bot. 50% Misclassified	-		UI-DIF SC	CODEC	GE 2	LE 1	TOTAL		-
					3	4		6		-	9	-									UKES					
2	2272 380	0	1	0	0	0	0	0	0	0				0	1 0	2				Top 2%		24	1	25		
3	380	ŏ	0		0	0	0	0						1	0	Ö				Bottom 5	0%	2	23	25		
4	1777	1	0	1	0	0	0	1	0					4	1	2										
6	1693 352	1	0	1	0	0	0	0		+-+				3	0	2				TOTAL		26	24	50		
	352	0	0	0	0	0	0	0						0	0	0										-
	1742	1	1	1	1	0	0	0	1	1				6	1	2										
)	1824	1	0	1	1	1	1	1		1	\rightarrow			8	1	2						ig "YES" (to	examine a	return for ur	reported in	come)
0	1782	1	1	1	1	0	0	0	0					4	1 1	2		we	re independ	ent of High	or Low (JI Scores.				
2	1895 352	 	0	0	1	0	0	0						0	0	0		2. H ₅ : T\	wo or more (Classifiers	respondi	ng "YES" (to	examine a	return for u	nreported in	come)
3	1824	1	0	1	0	0	1	1		0		1	1	7	1	2			re associate							
1	380	0	0	0	0	0	0	0		0				0	0	0										
5	380 1769	0	1 0	0	0	0	1	0		++-				2 2	1 1	1 2		3. Rando	ım chance, ı	no greater i	than 5%,	requires a c	hi-square v	alue of 3.841	i or less.	
7	352	0	0	0	0	0	0	0						0	0	0		4 Criteri	on: Reject I	Ho (Accent	t Ha) at 5	i% if chi-squ	 are > 3.841			
3	380	ō	0	0	0	0	0	0	0	+				0	0	Ō		1. 0.11011		. с (ловор.						
)	2085	1	1	1	0	1	0	1	+	1	1	1	1	9	1	2					Comput	ation of Ch	i-Square			
) I	1741 1663	1	0	0	0	0	0	1		0				3 4	1 1	2			-	Observed	Evenant	- d				-
2	1780	1	0	0	0	0	0	0						1	0	1				Observed (O)	(E)	(O-E)	(O-E) ²	(O-E) ² /E		
	352	0	0	0	0	0	0	0						0	0	Ó				7-7	\	\/	1 1	\/·-		
1	1781	1	0	1	0	0	0	0	0					2	1	2			& Top 2%	24	13	11	121	9.308		
5	380 380	0	0	0	0	0	0	0						0	0	0		"YES" UI	& Bottom 5	2	13 12	-11 -11	121 121	9.308 10.083		
7	1832	1	1	1	1	0	0	0		0				5	1	2			& 10p 2 /⁄o & Bottom 50'	23	12	11	121	10.083		
3	1808	1	1	1	1	1	0	1	1	0	0	1	1	8	1	2										
)	378	0	0	0	0	0	0	0		+-	\rightarrow			0	0	0						C	hi-Square:	38.782		
1	380 380	0	0	0	0	0	0	0	0		0			0	0	0							-			
	352	 	1	0	0	0	0	0	0					1	0	0										
3	380	0	0	0	1	0	0	1	1	0				3	1	1			Hi & L	ow UIS	cores	Per Audit	Sum			
	1701	1	0	1	0	0	0	0		0			0	2	1	2										
; ;	1914 352	1	1 0	0	0	0	0	0		+-				0	0	2		AUDIT	1	Bottom		AUDIT	CUM	CUM	Chi-	i i
,	1697	1	1	1	0	0	0	0						6	1	2		SUM	<u>Top 2%</u>	50%		SUM GE	Top 2%	Bot. 50%	Square	
1	380	0	0	0	0	0	0	0	0	0	0		0	0	0	0		1		200000						
)	1765	1	0	1	0	1	0	1		0	\rightarrow	1	0	6	1	2		11	0	0		11	0	0	N/A	
<u> </u>	352 352	0	1 0	0	0	0	0	0						1 0	0	0		10	0	0	1	10	0	0	N/A 1.020	
	1689	1	0	0	0	0	0	0		+-+				2	1	2		8	5	0		8	6	0	6.818	
	380	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	The state of the s	7	1	Ō		7	7	0	8.140	
	1896	1	0	0	0	0	0	0	0	1	0	1	0	2	1	2		6	3	0		6	10	0	12.500	
	2329 1924	1	1		0						1 1		1	8	1 1	2		5	1 6	0	1	5 4	11	0	14.103 25.758	
	1699	1	1				1				1 1			8	1	2		3	2	1		3	19	1	27.000	
3	352	Ó	1	0	0	0	0	0	0	0	0	0	0	1	0	0		2	5	i		2	24	2 7	38.782	<= N
9	352	0											0	0	0	0		1	1	5			25		28.125	
)	380	0	0	0	0	0	0	0	10	11 0	0	0	0	0	0	0		0	0	18		0	25	25	N/A	. 6
S Un	& (Top 2	(%)	12	17	7	8	4	14	11	9	10) 20	8	10.91							1				-	1
S UI To		/											8	11.82												
				1000																						

	porte			; 3	luc	ıy	(r	-114	ase	-	1												1	Activity				
ctivity	Code	53							1	1		-	-	-								Class	ificat	ion By C	<u> ptimai</u>	Audit S	<u>ums</u>	-
		(A)		Shou	ıld	The	Ret	urn	Be l	Exa	mir	ned					(B)		+ (B)									
			Fort	nre	oort						ES)	(0=	NO)				lit Sum		"GE 1" was Top 2%					Audit	<u>Sum</u>			
Seq #		TOP 2%	1	2	3	4	455 5	6	R	E	9	9	10	11	AUDIT SUM		GE 1 EQ 0		"EQ 0" was Bot. 50% Misclassified			UI-DIF SC	ODES	GE 1	EQ 0	TOTAL		
								<u> </u>								0							JOINES	3				
2	1507 1374	1		0	0	0	0	0	0			0		0	1		1		2			Top 2%		25	0	25		
3	1534	1			ŏ		0					ö		Ö	3		i		2			Bottom 5	0%	11	14	25		
4	1535	1	1	1	1	0	1	1				0		0	7		1		2									
5 6	401 375	0	1		0	0	0	0						0	1 0		1 0)			TOTAL	-	36	14	50		
7	1423	1	0		0	0		0						0	1		1		2									
В	375	0	0	0	0	0	0	0	0	0	וכ	0	0	0	0		0)									
9	375	0			0	0								0	1		1							ng "YES" (to	examine a	return for ur	reported in	come)
0	375 1424	0	0 1	0	0	0	0	0				0	0	0	0 4		0		2	we	re independ	ent of High	or Low	JI Scores.				
2	375	ò	- '		ŏ	Ö	0	Ö					i l	Ö	0		Ö)	2. H _a : Or	ne or more (Classifiers	respondi	ng "YES" (to	o examine a	return for u	nreported ir	ncome)
3	375	0	0	0	0	0	0	0	0	0				0	0		0)		re associate							
4	395	0	0		0	0		0						0	0		0			2 D1-			L 50/		4 .	-1	Contour	-
5 6	395 375	0	0		0	0	0	0	118					0	2		0)	5. Rando	m cnance, r	no greater t	man 5%	, requires a d	oni-square v	alue of 5.64	or less.	
7	1499	1	Ö		ō	ō		ō					ŏ	0	1		1		2	4. Criterio	n: Reject I	lo (Accept	Ha) at 6	5% if chi-squ	jare > 3.841			
8	1407	1	1	1	1	0	1	1	0			0		0	7		1		2									
9	1379 375	0	0		0	0	0	0				0		0	2		1 0		2				Compu	tation of Ch	i-Square			
1	375	H			0	1		0						0	1	_	1					Observed	Expect	ed				+
2	375	0	0	0	0		0	0	0				0	0	0		0	()			(O)	(E)	(O-E)	(O-E) ²	(O-E) ² /E		
3	375	0	0		0	0	0	0						0	0		0)					_				
4 5	401 375	0	1	0	0	0	0	0					0	0	2		1)		& Top 2% & Bottom 5(25 11	18 18	-7	49 49	2.722 2.722		-
6	1440	1	0		ŏ	Ö	0	Ö				ö		0	2		1		2	"NO" UI &		0	7	-7	49	7.000		
7	395	0	1	0	0	0	1	1	0	(0	0	3		1				Bottom 50°		7	7	49	7.000		
8	417	0	1		0	0	0	1				0		0	3		1						-	-	1. 6	40 444		-
9	1470 1486	1	1	1	0	0	0	0				——		0	1 5		1		2				-		:hi-Square:	19.444		-
1	401	Ö	Ö	Ö	ō	o		Ö					ŏ	ō	0		0											
2	1402	1	0		0	0	0		0			0		0	2		1		2					L				
3 4	1519 295	1 0	0	0 0	0	0	0	1				0	—	0	2		1		2		HI & L	_ow UIS	cores	Per Audit	Sum			
5	1363	1	1		ö	1	0	1				0		0	7		1		2									
6	1688	1	1	1	1	O		1	1		1	1	1	1	9		1		2	AUDIT		Bottom		AUDIT	CUM	CUM	Chi-	
7	1554	1	1	1	1	1	0	1	Ō			0	1	0	6		1		2	SUM	<u>Top 2%</u>	<u>50%</u>		SUM GE	<u>Top 2%</u>	Bot. 50%	<u>Square</u>	
9	397 1419	0	0		1	0		1						0	0 4		0		2	11	0	0		11	0	0	N/A	1
0	375	Ó	0		Ö	Ö	1	Ö	0	(0			0	1		1			10	Ö	0		10	0	0	N/A	
1	1649	1	1		0	0		0						0	4		1		2	9	2	0		9	2	0	2.083	
2	1542 1362	1	0	1	0	1	0	0	10	115	D		1	0	3 5		1		2	8 7	0	0		8 7	2	0	2.083 6.818	
3 4	375	6	0		0		0						뉘		0		0		2	6	1 1	0		6	6 7	0	8.140	
5	420	ō	0	1	0	0	0	0	0	1	1	0	0	0	2		1			5	2	0		5	9	Ö	10.976	
	379	0			0		0		Ō			0			1		1			4	4	0		4	13	0	17.568	
7	1376 1406	1			0		0		0			0		1	7		1		2	3 2	5	2		3 2	15 20	5	15.062 18.000	1
9	1436	1		_	1		0		10			1		1	9		1		2	1	5	6		1	25	11	19.444	<= N
0	1397	1	1		0		1							0	2		1		2	0	ō	14		0	25	25	N/A	
EQ LIP	0 /T	20/3	40	10	0	-	2	44	-		2		10	2	-													
ES UI) ES UI T	& (Top otal	∠70]		13 14		8			2 2						9 10.64			-			+		-	-	+			+
1				- 1	-	-	-	11.	11.	++	-	-		-	, 5.04			-							1			

	porte		2.57		tuc	· y	Ť.		30	-/	1									Class		ctivity (
ctivit	v Code	: 53					H													Class	incau	on By C	pumai	Audit S	<u>ums</u>	
		(A)			uld										(B)	(A) +										
			For	Unre	port	_					S) (0	=NC)	*****	Audit Sum		GE 10" was Top 2%					Audit 9	<u>sum</u>			
eq #	UI Score	TOP 2%		2	3		ASSI				a	10	11	AUDIT SUM	1 = GE 10 0 = LE 9		LE 9" was Bot. 50% Misclassified		-	UI-DIF SC	ORES	GE 10	LE 9	TOTAL		
					2	-	2	2	-	2	2	10	111				VIISCIASSIIIEU				OKES	3	3			1
2	963 427	0	1		1	1	1	1	1	1	1	0	0	10 9	0	2				Top 2%		22	3	25		
3	460	Ö	1		-		Ö		1	1	1	0	ō	8	ō	Ö				Bottom 5	0%	6	19	25		
4	456	0	1			1	1	1	1	1	1	0	1	10	1	1										
5 6	1036 456	1	1			1	1	0	1	1	1	1	0	7	0	2				TOTAL	-	28	22	50		-
7	379	0	0			1	6	0	1	-	0	0	0	5	0	0										
8	963	1	1	1	1	1	1	1	1		1	1	1	11	1	2										
9	491	0	1		1	0	1	1	1		1	1	0	9	0	0						g "YES" (to	examine a	return for uni	reported inc	come)
10 11	924 919	1	1		1	1	1	0	1	-	1	1	1	10 11	1 1	2		wei	e independe	ent of High	or Low U	JI Scores.				
2	872	1	1			1	1	1	1	1	1	+	1	11	1	2		2. H _a : Te	n or more C	lassifiers r	espondin	g "YES" (to	examine a	return for un	reported in	come)
13	485	0	1		1	1	0	1	1	1	0	0	1	8	0	0			e associate						- 12	
4	449	0	0		1	0	0	1	1	-		0	0	3	0	0		0 0			F0/				TOWERS BENEVALEN	
6	1019 460	1 0	1			0	1	1	1		1	1	0	9	0	1 0		3. Randor	m chance, n	o greater t	han 5%,	requires a c	hi-square v	alue of 3.841	or less.	
7	957	1	1		1	1	1	1	1	1	1	1	1	11	1	2		4. Criterio	n: Reject H	lo (Accept	Ha) at 5	% if chi-squ	are > 3.841			
8	963	1	1		1	1	1	1	1	1	1	1	1	11	1	2										
9	886	1	1		1	1	1	1	1	1	1	1	1	11	1 1	2					Comput	ation of Ch	-Square			
20 21	998 886	1	1			1	1	1	1	1	1	1	1	11	1	2	-	-		Observed	Evnecte	od				-
2	427	Ó	1		1	Ö	Ö	1	1	1	Ö	Ö	Ö	6	i i	Ô				(0)	(E)	(O-E)	(O-E) ²	(O-E) ² /E		
3	427	0	1			1	1		1		1	. 0	0	9	0	0										
4	948 427	1 0	1		0	1	1	1	1	1	0	1	1	11 3	0	2		"YES" UI		22 6	14	-8	64 64	4.571		
5 6	460	0	1			1	1	1	1	1	1	0	1	11	1	1		"NO" UI &	& Bottom 5(Top 2%	3	11	-8	64	4.571 5.818		
7	460	ō	1			1	1	1	1	1	1	1	Ö	10	1	1			Bottom 50°	19	11	8	64	5.818		
8	466	0	0			0	0	1	1	-	1	1	0	5	0	0										
9	460 886	0	1		1	1	1	1	1	1	1	0	0	9 10	0 1	0 2					-	C	ni-Square:	20.779		-
1	932	1	1		1	1	1	1	1	1	0	1	1	10	1	2										
2	924	1	1	1		1	0	1	1	1	1	1	1	10	1	2										
3	886	1	1		1	1	0	1	1	1	1	1	1	10	1	2			Hi & L	ow UIS	cores	Per Audit	<u>Sum</u>			
5	502 872	0	0 1		1	1	0	1	1	1	1 1	0	0	6 11	0 1	2										
6	427	Ö	1			1	1	1	1		1	6	1	10	1	1		AUDIT		Bottom	1	AUDIT	CUM	CUM	Chi-	1
7	439	0	0	0	1	0	0	1	0		0	0	0	3	0	0		SUM	<u>Top 2%</u>	<u>50%</u>		SUM GE	<u>Top 2%</u>	Bot. 50%	Square	
8	957	1	1		1	0	0	1	1	1	1	1	1	9	0	1		44	10	4		44	10	4	20.052	
9	851 456	1	1		1	1	0	1	1	1	1	0	1	11 8	0	2		11 10	16 6	1 5		11 10	16 22	1 6	20.053 20.779	<= MA
1	460	0		Ö			ō	1	Ö		+	Ō		2	0	0		9	2	5		9	24	6 11	16.095	1000
2	934	1	1						1		0	1	0	7	0	1		8	0	3		8	24	14	10.965	
3	930	1			1									11	1	2		7	1 0	3		7	25 25	15	12.500	
5	460 930	1			1								1	10	1 1	1 2		5	0	2		5	25 25	18 20	8.140 5.556	
6	427	Ó	1	1	1	1	1	1	1			0	1	10	1	1		4	0	1		4	25	21	4.348	
7	1009	1	1			1		1	1		1		1	11	1	2		3	0	3		3	25	24	1.020	
9	872 439	0			1	\rightarrow	\rightarrow	-	1		1	1	1	11 4	0	2	i.	1	0	1 0		1	25 25	25 25	N/A N/A	
0	460	0	1				1		1		1			9	0	0	12	0	0	0		0	25 25	25	N/A	
																										i di
	& (Top	2%)			25									23.73												
SUIT	lotal	-	43	42	45	40	32	45	48	49	39	31	2/	40.09							-					
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	portec				luc	y	١.	H.	usc		_										Class	No. 10 28	Activity C	. 200.00			
Activity	Code:																		- 5		Class	sincau	ion By C	pumai	Audit St	ums	
		(A)							Be I							(B)		+ (B)					A				
C	UI	TOP	-or	Jnre	port	-			? (1		ES)	(0=1	10)		AUDIT	Audit Sum 1 = GE 8		"GE 8" was Top 2% "LE 7" was Bot. 50%					Audit S	sum			
Seq #		2%	1	2	3				ER		3 9	9 1	ın	11	SUM	0 = LE 7		Misclassified			UI-DIF SO	ORES	GE 8	LE 7	TOTAL		
1	497	0	0	0	1	0	0				_	_		0	2	0)		1	Top 2%		25	0	25		
2	486	0	Ö	1	1	ō	Ö							0	3	0	(1	10p 2 /0	1	2.5		LJ		
3	746	1	1	1	1	1	0	1	1	0) '	1		0	8	1					Bottom 5	0%	3	22	25		
4	753 489	1	1	1	1	1	0			11.	1	1		0	9	1		2			TOTAL		20	22	F0		
5 6	497	0	0	1	1	+	0			++-	1 1			0	7	0		1			TOTAL	1	28	22	50		
7	727	1	1	1	1	1	ō			11	1	1	ŏ	1	9	1											
8	723	1	1	1	1	1	1	+-+			1	1	1	1	11	1					L						ļ
9	726 732	1	1	1	1	1	1	1		11	1	1	1	1	11	1 1		2		ight or more ere independ			ing "YES" (to	examine :	a return for u	nreported ii	ncome)
11	748	1	0	1	1	1	0			++-	1	1	1	1	9	1			WE	are maepend	ent of riigh	Of LOW (of Scores.				
12	445	0	0	Ö	1	0	0	1	0					Ö	3	0	(ling "YES" (t	o examine	a return for u	unreported i	ncome)
13	470	0	1	1	1	0	0			0		1	1	1	8	1			We	ere associat	ed with Hig	h or Low	UI Scores.				-
14 15	479 498	0	0	0	1	0	0						\rightarrow	0	2	0)	3 Danda	m chance	no arester	than 5%	requires a c	hi-sauara v	alue of 3.841	nr lecc	
16	753	1	1	1	1	1	Ö			10		1		0	8	1			J. IXanut	om chance,	greater	man J70,	isquires a C	oquale V	a.a6 or 3.041	JI 1633.	
17	464	0	0	0	0	0	0			0) (0		0	1	0			4. Criteri	on: Reject	Ho (Accept	Ha) at 5	% if chi-squ	are > 3.841			
18	496	0	1	1	1	1	1	++-		11	1	1	1	0	10	1 1											
19 20	753 730	1	1	1	1	1	1	1		+-	1	1	1	1	11	1 1		2				Comput	tation of Chi	-Square			
21	744	1	1	1	1	1	Ó	++	\rightarrow	117	1	ill	1	Ö	9	i i					Observed	Expect	ed				
22	475	0	1	0	1	1	0			0) (ם ד	1	1	7	0)			(O)	(E)	(O-E)	(O-E) ²	(O-E) ² /E		
23	746 506	1	1	1	1	1	1				1 .			1	11 5	0		1	"VEO" III	0 Tan 20/	25	14	11	101	8.643		
25	802	1	1	1	1	1	1	1		++-	1 1	1	1	1	11	1		!		& Top 2% & Bottom 5		14	-11	121 121	8.643		
26	768	1	1	1	1	1	1	1				1	1	1	10	1			"NO" UI 8	& Top 2%	0	11	-11	121	11.000		
27	732	1	1	1	1	1	0			0) .	1	1	1	8	1			"NO" UI 8	& Bottom 50)° 22	11	11	121	11.000		
28	804 456	1	0	0	0	0	0			+ 10				0	9	0		2					CI	ni-Square:	39 286		
30	505	0	1	6	1	0	0							0	2	0)						n-square.	00.200		
31	754	1	1	1	1	1	0	1	1	1	1 '	1	1	1	10	1	1										
32	738	1	1	1	1	1	0			1 0) (1	의	1	8	0		1		шо	Lowellic	`00500	Per Audit	Cum			
33 34	496 505	0	0	0	1	0	0			1	1 1	1	壯	0	4	0				по	LOW OIS	cores	rei Audit	Sum			
35	472	ŏ	ō	1	1	Ö	0					0		Ö	2	ō					1						
36	511	0	1	1	1	1	0	1	1	1	1	1		1	10	1			AUDIT		Bottom		AUDIT	CUM	CUM	Chi-	
37 38	467 513	0	0	0	0	1	0			10			─	1	7	0		1	SUM	<u>Top 2%</u>	<u>50%</u>		SUM GE	<u>Top 2%</u>	Bot. 50%	<u>Square</u>	
39	488	0	0	6	1	0	0			10				0	1	0		1	11	9	0		11	9	0	10.976	
40	486	0	1	Ō	Ö	1	0	1		10		0	1	1	6	0	(10	6	2		10	15	2	15.062	
41	753	1	1	1	1	1	0			1	1	1	1	1	10	1			9	5	0		9	20	2	26.299	
42 43	761 822	1	1	1	1	1	1		1 1					1	11	1 1		2	8 7	5	3		8 7	25 25	3 6	39.286 30.645	<= MA
44	411	0	ان.						1 6				الـــــــــــــــــــــــــــــــــــ	1	2	0		i I	6	0	4		6	25	10	21.429	
45	790	1	1	0	1	1	1	1	1	1	1 :	1	1	1	10	1	1	2	5	0	1		5	25	11	19.444	
46	824	1	1			1					1 1			1	10	1		2	4	0	2		4	25	13	15.789	
47 48	498 766	0	0	0					0 1					0	1 8	0 1	0		3 2	0	6		3 2	25 25	15 21	12.500 4.348	
49	756	1	1					1	1	1	1	1	1		10	1		2	1	0	3		1	25	24	1.020	
50	471	0	1	0							5 .			0	6	Ö		i	0	Ō	1		0	25	25	N/A	
VECTION	0 7 7	10()	2.	2.	25	25	4.4	1			0		12	10	22.40				18	1							
YES UI) 'ES UI T	& (Top 2 otal	2%)							3 25 9 37						22.18 31.91		-										
20 01 1	otai		33	33	40	33	12	100	, , ,	12		1	-		31.51					1							
NO LID 8	& (Botton	50%)	16	16	4	15	24	9	13	3 1	8 1	9 1	16	18	15.27												

nrei	rporte	d In	con	e:	Stu	Idy	_	(P	ha	se	1	2											Mar. 11 280	ctivity C				
tivit	v Code	53	37																			Class	ificati	on By O	ptimal	Audit S	ums	
		(A)	For		ould									NO)			(B) Audit Sum		<u>+ (B)</u> "GE 7" was Top 2%					Audit S	Sum			
eq	UI	TOP								R		Ť	1	1		AUDIT	1 = GE 7		"LE 6" was Bot. 50%									
ŧ	Score	2%		2	3							3 :	9	10	11	SUM	0 = LE 6	1 =	Misclassified			UI-DIF SO	CORES	GE 7	LE 6	TOTAL		
CT.	920	1	1	1	1	Th	0	0	1	1	1	T	1	1	1	9	1	2				Top 2%		24	1	25		
2	326	0	0					0	0						0	0	0	0										
3	380	0	1	+				0	1		1		밁		1	6	0	0				Bottom 5	0%	0	25	25		
5	397 980	0	1		0			0	0		1 1		의		0	3 10	0 1	2				TOTAL	1	24	26	50		-
5	920	1	1	++-	1		i	1	1		Ιį		1	1	1	10	1	2				TOTAL				- 00		
7	405	0	1	++-	0			0	1		1		0	0	0	3	0	0										
3	986 935	1	1		1 0		0	1	1				1	1	0	9	0	1		1 H · C	oven or more	. Classifier	o roonono	ling "YES" (t	o ovemine	a ratura for	unroportod	incomo
0	1018	1	1		1				1		1		1	1	0	8	1	2			even or mon ere independ				o examine	a return for	unreported	income
1	328	Ó	1		1			Ö	1		Ì		o I		1	6	Ö	Ō		1								
2	957	1	1		1		1	1	1		C		1	1	0	9	1	2						ding "YES" (to examine	a return for	unreported	incom
3	966 396	1	1	++-			0	0	1				1	1 0	0	7	0	2		We	ere associat	ed with Hig	h or Low	UI Scores.				
5	969	1	1				0		1		1 6		1		0	7	1	2		3. Rando	om chance	no greater	than 5%	requires a c	hi-square v	l alue of 3 841	or less	
6	337	Ö	1	++-				Ö	1		1		o I		0	4	Ó	0				J. S. C. S.						
7	282	0	1	+	0		0	0	0		C		0		0	1	0	0		4. Criteri	on: Reject	Ho (Accept	t Ha) at 5	% if chi-squa	are > 3.841			
9	390 1009	0	1		1 1		1	0	1	-	1 1		9	0	0	6 11	0 1	2					Communi	stion of Chi	Causes			
0	969	1	1		1	+	1	1	1	-	1 1		1	1	1	11	1	2					Comput	ation of Chi	-Square			1
i i	337	Ö	Ö		1	11	ċΗ	Ö	1		T c	1	1	1	Ö	4	Ö	Ō				Observed	Expecte	ed .				
2	351	0	1		0				1						0	2	0	0				(O)	(E)	(O-E)	(O-E) ²	(O-E) ² /E		
3	382	0	0	++-	1 1	411	0	0	1		[9	0	0	3	0	0		"VEO" LU	0 T 20/	24	40	40	111	40.000		
5	920 326	1	1 0		110		 	-	0			1	ㅐ	 	0	9	0	2			& Top 2% & Bottom 5	24 5(0	12 12	12 -12	144 144	12.000 12.000		
6	394	ŏ	1						ō		Ιtċ		ŏĦ		Ō	5	ō	ŏ		"NO" UI 8		1	13	-12	144	11.077		
7	1014	1	1		1		1	1	1		1		1	1	1	11	1	2			& Bottom 50	r 25	13	12	144	11.077		
8	401	0	0			44	의	0	0		1 5		밁		0	2	0	0						CI	ni-Square:	46 454		-
9	409 935	1	1		1	+	1	0	1				0	0	0	9	0 1	2		-			-	CI	n-Square:	46.134		-
1	388	Ö	1 0		1	11	i l		Ö				itt	ö	0	1	0	0		1								
2	986	1	1	1	1		1	1	1	1	1		1	1	1	11	1	2										
3	337	0	1	10	10		의	0	0		1 0		ᅋ	0	0	1	0	0			Hi &	Low UIS	cores	er Audit	Sum_			
ļ ,	1064 337	1	1 0		1 0		0	0	0		0		-	1	0	10	0	2										
3	337	0	1						0		+		5 		0	2	0	0		AUDIT		Bottom		AUDIT	CUM	CUM	Chi-	
7	949	1	1	1	1		1	1	1		1		1	1	1	11	1	2		SUM	Top 2%	50%		SUM GE	Top 2%	Bot. 50%	Square	
3	969	1	1		1		<u> </u>	1	1	1	1		1	1	1	10	1	2			_	_		4.4	_	-	F F	
)	920	0	1		1 1	+ -	0	0	1		1 1	1	0		0	2 8	0 1	2		11 10	5 7	0	1	11 10	5 12	0	5.556 15.789	
- 5-20 bosso	326	0	0		10	11	╁	0	6		ď	1	ᆎ	0	0	0	0	0		9	7	0		9	19	0	30.645	
2	1026	1	1	1	1		0	0	1	1	C		1	1	1	8	1	2		8	3	0		8	22	0	39.286	
	368	0	1	0	0	4		0	0	0	0				0	1	0	0		7	2	0		7	24	0	46.154	<= 1
l	1064 373	1	1		1									1		9 2	0	2		5	1 0	3		5	25 25	4	39.286 36.207	
5	931	1	1	# 1	1		ŏĦ	ŏ	1	1	1 1	11	1			9	1	2		4	0	3		4	25	7	28.125	
7	405	0	1	0	0		0	0	1	0	C) [0	0	0	2	0	0		3	0	4		3	25	11	19.444	
В	984	1	1		1)			-	10	1	2		2	0	6		2	25	17	9.524	
9	1026 938	1		++-	1			_	_	1	+-	\rightarrow \leftarrow			1	10 10	1 1	2		1 0	0	4		0	25 25	21 25	4.348 N/A	
0	200	1		#'	11		1		1	11	Пc	A		I I	3. 2	10	31			0	1 0	4		U		25	IW/A	: Pei
ES UI)) & (Top	2%)			3 24											21.09												
S UI	Total		40	28	34	4 1	16	18	37	26	2	0 2	26	33	19	26.82												
2 110	& (Botto	n 509	%) 10	21) 14	5 2	22	25	12	22	1	a -	24	17	23	19.27					-	-						-
, OI)	∞ (⊡υιιυι otal	11 00								24						23.18						1						

	porte			Ĭ		1	٠.	···		Ť	4	-									Class	1	Activity (Audit S	Lime	
Activity	√ Code		8																		Class	incau	он Бу С	pumai	Audit 5	ums	
		(A)		Sho									10)			(B)		+ (B)					A				
C	UI	TOP	For	Unre	роп	-			? (1 ■R		ES)	(U=1	10)		AUDIT	Audit Sum 1 = GE 5		"GE 5" was Top 2% "LE 4" was Bot. 50%				-	Audits	<u>Sum</u>			-
Seq #	Score	2%	1	2	3	4	5	6		٠ <u>٤</u>	3	9 1	0 1	_	SUM	0 = LE 4		Misclassified			UI-DIF SC	ORES	GE 5	LE 4	TOTAL	1	
1	758	1	1	1	0	1	1	1	1 1	114		1	1 4		10	1	2	L.			Top 2%	-	22	3	25		
2	706	1	1	1	ŏ	1	1	1	1 1	1	╁┼	1	1 6		9	1	2				10p Z /0		22	,	23		
3	341	0	Ö		0	0	0	0	O	0)	0 1	0		1	0	0				Bottom 50	0%	7	18	25		
4	691	1	1	1	0	0	1					1	0	-	7	1	2										
5 6	769 310	1	0	1	0	0		1				1			4 5	0 1	1				TOTAL	-	29	21	50		
7	773	1	1	1	Ö		1	1			\rightarrow	1	1 0		9	1	2										
8	846	1	1	1	0		1	1				1	0		9	1	2										
9	377	0	0	1	0	1	0	0					0		4	0	0							examine a	return for un	reported inc	come)
10 11	402 691	0	0	0	0	0	0	1			\rightarrow	0			2 5	0 1	2		wei	e independ	ent of High	or Low (JI Scores.				
12	763	1	1	1	1	+	1	1			1		Hö		9	1	2		2. H _a : Fiv	e or more !	⊥ Classifiers i	respondi:	ng "YES" (to	examine a	return for ur	nreported in	come)
3	790	1	1	1	0	1	n	1	0	C		1	0	500	6	1	2				ed with Higl						
4	687	1	1	1	1	1	1	1				1	1		11	1	2										
15 16	437 724	1	0	0	0			1) 0		2 4	0	0		3. Randoi	n chance,	no greater t	than 5%,	requires a c	;hi-square v	alue of 3.841	l or less.	-
7	710	1	1		0	0		1			1	1	110	_	8	1	2		4 Criterio	n: Reiect I	Ho (Accent	Ha) at 5	5% if chi-squ	lare > 3.841			
8	437	Ö	Ò	Ö	ō	ō	0	Ö				o l	7 10		0	0	Ō		1. 01110110		io (locop.	1111, 111	70 11 0111 040				
9	758	1	1	1	0	1	1	1				1	0		8	1	2					Comput	tation of Ch	i-Square			
0	364	0	0	1	0		0	0					0		1	0	0				01 1	-					-
2	408 322	0	0	0	0	0	0	1) 0		3	0	0				Observed (O)	Expecti (E)	<u>ed</u> (O-E)	(O-E) ²	(O-E) ² /E		-
3	349	0	1	1	ŏ	1	1	1				\rightarrow	٥١١٥		8	1	1				(0)	(L)	(0-L)	(0-L)	(0-1) /1		
4	761	1	1	1	0	1	1	1	0	1		1	0	_	8	1	2		"YES" UI		22	14.5	7.5	56.25	3.879		
5	405	0	1	1	0	0		1)	1	1 1		7	1	1			& Bottom 5		14.5	-7.5	56.25	3.879		
26 27	715 347	0	1	1	0	1	1	1			1	1 1	1 1		10	0	2		"NO" UI &		3 18	10.5	-7.5 7.5	56.25	5.357		
8	379	0	0	0	0	0	0	0				러난			3	0	0		NO UI&	Bottom 50	10	10.5	7.5	56.25	5.357		-
9	394	ŏ	Ö	Ö	ŏ			0					i li		Ö	0	Ö						С	hi-Square:	18.473		
0	408	0	0	0	0	0	0	0			\rightarrow	1	0		3	0	0										
1	291	0	0	1	0			1				의			4	0	0										-
3	669 366	0	0	1	0	1	0	1				1 1	0 1		5 7	1	1			Hi & I	ow HI S	COTAS	Per Audit	Sum			
4	431	0	1	1	Ö		1	Ö			+	1	í Há		7	1	1			1110			- CI Addit	Cum			
5	374	ō	1	1	ō	1	1	1				1	i li		9	1	1										
6	371	0	0	0	0	0	0	0				\rightarrow) 0		1	0	0		AUDIT		Bottom		AUDIT	CUM	CUM	Chi-	
8	688 310	0	1	1	0	1	0	1			-		1	_	8	0	2		SUM	<u>Top 2%</u>	<u>50%</u>		SUM GE	<u>Top 2%</u>	Bot. 50%	<u>Square</u>	
9	429	0	0	H	0	0		0				\rightarrow) 0		0	0	0		11	2	0	1	11	2	0	2.083	
0	702	1	1	1	ō	ō						1			8	1	2		10	2	0		10	4	Ö	4.348	
1	396	0	1	1	0		1	1				1	0		9	1	1		9	4	2		9	8	2	4.500	
2	379	0	0	0	0		0								4	0	0		8	7	1		8	15	3	12.500	
4	676 747	1	1						1			1	1 0 1 1		6 8	1 1	2		6	2	3		6	17	6	9.742 13.520	
5	341	6	- 6	0	0	0	0	1	10	# 1	1		Ö		3	0	0		5	3	1		5	22	7	18.473	<= N
6	746	1	1	1	1	1	1	1	1	1	1	1	1		11	1	2		4	2	3		4	24	10	18.015	
7	666	1	1	1	0	0	1			1		1			8	1	2		3	0	4		3	24	14	10.965	
8	674	1	1	1	H	0	0	1	10	1		1	0 1	_	5 7	1 1	2		2	0	3		1	24	17	6.640 3.030	
9	674 669	1	0	0	H	H	0	0	110	11			<u> </u>		0	0	1		1 0	1	5		0	24 25	20 25	3.030 N/A	
5	200								T,		100				_		<u> </u>					-					i è
	& (Top	2%)											0 7		16.64												
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Appendix E:

Research Proposal For The UI Study

Testing The Efficacy Of UI-DIF Formulas

By Lance Asner

Background

Unreported Income (UI) DIF Formulas were developed by the Office of Research. They were developed by the DIF Team, Studies And Modeling B (N:ADC:R:R:SDIB), for the Denver DORA, now under SB/SE. UI-DIF Formulas were developed from the most recent TCMP Survey of Individuals¹, and were developed for Activity Codes 532 to 539. Activity Codes 530 and 531 were not included because they displayed too few returns with non-IRP unreported income.

UI Formulas were developed using the DIF methodology, a proven technique for workload selection. Workload was defined as returns with non-IRP unreported income. Returns with high UI Scores are expected to yield more unreported income than returns with lower UI Scores. High UI Scores can be used by market specialists to identify returns, many of which are expected to yield substantial unreported income.

High UI Scores may justify tests for unreported income that might otherwise be prohibited. Legislation enacted in RRA 98 stated, "The Secretary shall not use financial status or economic reality examination techniques to determine the existence of unreported income of any taxpayer unless the Secretary has a reasonable indication that there is a likelihood of such unreported income." High UI Scores may satisfy this requirement to provide 'a reasonable indication that there is a likelihood of such unreported income'.

The customer for UI-DIF Formulas is Centralized Workload Selection and Delivery, Compliance Policy, SB/SE.

Study Plan

SB/SE would like to test of the efficacy of UI Scores in several months, avoiding new exams. New exams require many years to complete and evaluate.

Experts in unreported income will classify returns with very high and low UI Scores. All information about the UI Scores will be shielded from the classifiers. Classifiers will screen returns and designate each return as either "Should Be Examined For Unreported Income" or "Should Not Be Examined For Unreported Income." Results will be tabulated and associated with the UI Scores. Two conditions are necessary to validate the efficacy of UI Scores: (1) A strong association between high UI Scores and "Should Be Examined For Unreported Income", and (2) a strong association between low UI Scores and "Should Not Be Examined For Unreported Income". Weak associations invalidate the UI Scores.

¹ The III-10 TCMP Survey involved Tax Year 1987 Individual returns filed in Processing Year 1988.

² The IRS Restructuring and Reform Act of 1998, Code Sec. 7602, "Examination Of Books And Witnesses", (e), "Limitation On Examination On Unreported Income."

The study will test all eight UI Formulas. For each activity code, 50 returns will be classified, 25 returns with high UI Scores and 25 returns with low UI Scores. The 25 returns with high UI Scores will be randomly selected from among the two percent of returns with highest UI Scores. The 25 returns with low UI Scores will be randomly selected from among the fifty percent of returns with lowest UI Scores. Experts will classify the returns (with origin unknown) as either "Should Be Examined For Unreported Income" or "Should Not Be Examined For Unreported Income".

Eleven experts in unreported income will classify 400 returns (50 returns per activity code, for eight activity codes). Returns will be displayed as MACS facsimiles and will include MACS facsimiles for two prior years. Expert classification will require one week. This is Phase 1. Phase 1 tests the efficacy of the UI-DIF Formulas.

Phase 2 tests classification with MACS facsimiles and with original returns. Original returns may include line items not displayed on MACS facsimiles, because they were not transcribed during return processing. The two phases will be as similar as possible.

Classifier recommendations to examine or not to examine returns will be cross tabulated with high or low UI Scores in two-by-two tables. Statistical tests of the independence of classification will be completed for each set of 50 returns.

Procedures

The UI Study will be conducted and coordinated by two experienced researchers; (1) a representative of SB/SE Research in Denver (Rep-Denver), and (2) a representative of SB/SE Compliance Policy in DC (Rep-DC). The Rep-Denver and the Rep-DC will insure the integrity of the UI Study. The following procedures will be observed:

- 1. Returns will be selected for classification at the MACS Development Center. "Return Selection For Classification" appears in the Appendix.
- 2. The Rep-Denver and the Rep-DC are the **only** persons who will communicate with the Classifiers during the study.
- 3. Classifiers will be instructed **NOT** to discuss the returns, the classification process, nor the study in general, with anyone other than the Rep-Denver or the Rep-DC. Communications about the study should be public and observed by all Classifiers.
- 4. Eleven (11) classifiers will be selected for their experience with unreported income in Activity Codes 532 to 539.
- 5. One set of Study returns will be prepared for each Classifier. Study returns will be arranged in the same order for each activity code. Study returns will be classified in the same order by all Classifiers.
- 6. Classifiers will be instructed to safeguard their scorecards. Whenever scorecards are not in use, they will be collected and secured by Rep-Denver or Rep-DC.

Security

The UI Formulas are available on a 'need-to-know' basis. The formulas and related materials must be safeguarded at all times; they will be stored and locked in IRS containers when not in use. UI Formulas will be provided to MACS, and all materials associated with the UI Formulas will be destroyed at the conclusion of this study.

Scorecard

A scorecard summarizes one expert classifying 50 returns (one activity code). The UI Study involves 88 scorecards (11 scorecards per activity code for eight activity codes). Experts record whether returns should or should not be examined for unreported income. The Rep-Denver and Rep-DC will insure that scorecards are completed independently. They will secure the scorecards when classification is not in progress. Scorecards will be sent to the DIF Team for tabulation and analysis. A sample scorecard template follows:

Unrerported Income Study (Phase 1)

Activity Code:	Should The Return Be Examined
Classifier:	For Unreported Income?

Seq#	<u>TIN</u>	<u>YES</u>	<u>NO</u>
1	xxxxxxxx		
2	xxxxxxxx		
3	xxxxxxxx		
4	xxxxxxxx		
5	xxxxxxxx		
6	xxxxxxxx		
7	xxxxxxxx		
8	xxxxxxxx		
9	xxxxxxxx		
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11	xxxxxxxx		
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41	xxxxxxxx	
42	xxxxxxxx	
43	xxxxxxxx	
44	xxxxxxxx	
45	xxxxxxxx	
46	xxxxxxxx	
47	xxxxxxxx	
48	xxxxxxxx	
49	xxxxxxxx	
50	xxxxxxxx	

Scorecard Tabulation

Completed scorecards will be analized by the DIF Team of the Office Of Research. Software macros will be developed to quickly complete the following:

1. Tabulation - Each scorecard will be tabulated as a two-by-two table.

CLASSIFICATION

<u>UI Score</u>	"YES" UI	NO" <u>UI</u>	TOTAL
Top 2%	XX	XX	25
Bottom 50%	XX	XX	<u>25</u>
TOTAL	XX	XX	50

- 2. A two-by-two Average Table will be developed for each activity code. For each activity code, the four intersections will be averaged across the 11 two-by-two tables.
- 3. A two-by-two Consensus Table will be developed for each activity code. Each return will be categorized by the **majority** of expert votes as either 'YES' UI or 'NO' UI.
- 4. A statistical test of independence of classification³ will be completed for each of the two-by-two table, as follows:
- (1) H_o: Hypothesis Responses of "YES" and "NO" to examine returns for unreported income were independent of High and Low UI Scores.
- (2) H_a: Alternative Hypothesis Responses of "YES" and "NO" to examine returns for unreported income were associated with High and Low UI Scores at levels that were statistically significant.
- (3) A five percent probability if H_o occurring randomly requires a chi-square of 3.841. (one degree of freedom).
- (4) Criterion: Reject H_0 (Accept H_a) if chi-square > 3.841.

Usefulness Of Each UI Formula

Analyses will be prepared by the DIF Team, Office Of Research, to assist SB/SE evaluate the usefulness of each UI Formula.

³ Charles T. Clark and Lawrence L. Schkade, <u>Statistical Analysis For Administrative Decisions</u> (Cincinnati: South-West Publishing Co., 1974), pp. 376-378.

Appendix

Return Selection For Classification

Returns will be selected for the study at the MACS Development Center, as follows:

- 1. Program the UI-DIF Formulas onto MACS.
- 2. For all TY 1999 Individual returns filed in PY 2000, extract the following fields for Activity Codes 532 to 539; (1) UI Score, (2) DIF Score, and (3) TIN. (create extract files AC-532 to AC-539)
- 3. Sort returns by 'UI Score', highest to lowest, for each activity code.
- 4. Create a new variable, 'Random1', from a random number generator, for each activity code.
- 5. Select the top two percent (2%) of returns with highest UI Scores in each activity code and sort by 'Random1', highest to lowest.
- 6. Select the 25 returns with the greatest values for 'Random1' in each activity code. Call the set of 25 returns for each activity code, the '25 high'. (create extract files H25-532 to H25-539)
- 7. Select the bottom fifty percent (50%) of returns with the lowest UI Scores in each activity code and sort by 'Random1', lowest to highest.
- 8. Select the 25 returns with the lowest values for 'Random1' in each activity code. Call the set of 25 returns for each activity code, the '25 low'. (create extract files L25-532 to L25-539)
- 9. Combine the '25 high' and '25 low' returns for each activity code. Call the set of 50 returns for each activity code, the 'combined 50'. (create extract files C50-532 to C50-539)
- 10. Create a new variable, 'Random2', from a random number generator, for the 'combined 50' in each activity code.
- 11. Sort the 'combined 50' by 'Random2', lowest to highest. Call these returns the 'random 50'. The 'random 50' identify the returns in each activity code and their arrangement for classification. Create a new variable, 'Sequence', numbering each return from one to 50. 'Sequence' will appear prominently on each facsimile return and corresponds to 'Seq #' on the scorecard. (create files R50-532 to R50-539)
- 12. Create an Excel workbook with eight spreadsheets, one for each activity code. Display the following items from the 'random 50' for each activity code; (1) 'Seq #', (2) 'Random 2', (3) 'UI Score', (4) 'Random 1', (5) TIN, and (6) DIF Score. Workbook will be sent to the DIF Team.
- 13. Order original returns of the 'random 50' in each activity code for Phase 2.

Generate MACS facsimile returns by Sequence Number for PY1999, prior year PY1998, and prior year PY1997, for the 'random 50' in each activity code for Phase 1.